

THE EXCAVATION OF SKIPPER'S RIDGE (N40/7), OPITO, COROMANDEL PENINSULA, IN 1959 AND 1960

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Abstract. The evidence from excavations at Skipper's Ridge during 1959 and 1960 is reviewed. Structural remains are discussed in detail, and midden and artifacts described.

The Auckland University Archaeological Society carried out excavations at Skipper's Ridge (N40/7), Opito, on the east coast of the Coromandel Peninsula, on several occasions between January 1959 and January 1960. The excavations, directed by R. H. Parker, formed part of the overall programme in the area organised by J. Golson (1959), who also supervised the initial work at Skipper's Ridge.

The site was first tested in response to the insistence of the owner, Mr R. H. (Skipper) Chapman, after whom it was named. The preliminary testing proved sufficiently interesting for further work to be undertaken, and the structural remains uncovered assumed a role of fundamental importance in discussions of pits, their functions, and their possible use as types in chronological sequences. Preliminary reports were published by Parker (1959, 1960) and the site was also discussed in an important later paper by him (1962). Green mentioned it in two papers the following year (1963a, 1963b) and it was discussed in two MA theses in 1964 (Davidson n.d.; Groube n.d.). In 1965 Groube wrote of it as producing "the most puzzling and yet the most spectacular evidence of domestic activity so far recovered from controlled excavation" (1965, p. 16). The same year, Golson (1965) took up arguments involving the site which Green (1963b) had previously raised. No detailed results of the excavations were ever published, however. It is the purpose of this paper to record the information which can now be assembled about the site.

THE SETTING

Skipper's Ridge rises at the back of a narrow coastal flat behind the beach and runs inland to join the main ridge system behind Opito Bay. To the north and east is the sweep of the bay; to the south and west a stream valley and swamp. The stream is referred to as the Otama Stream in older publications, but as the Waitaha Stream more recently (Calder n.d.).

Skipper's Ridge is only one of a number of sites which have been investigated over the years at Opito and neighbouring Sarah's Gully, and several summaries of the area and its sites are available (Green 1963a, Calder n.d.). The setting is an attractive one for Polynesian settlement. The ridge itself is well drained and relatively sheltered, close to the beach and to the stream. The important Opito Beach Midden (N40/3) excavated

by Golson is in the sand dunes to the northeast. A locality map, thought to be missing, has recently been found, and is discussed in a following paper (Davidson & Green, this volume). Approximately 2 km to the south is Tahanga Hill, source of the basalt used by the occupants of the site.

When Chapman first drew the attention of archaeologists to the site he suggested that the particularly luxuriant growth of green grass and the humpy appearance of the surface reflected extensive evidence of occupation. He had found an adze and patches of shell midden while fencing some distance up the ridge. The excavation was carried out near the tip of the ridge and uncovered only a small sample of the total site (estimated by Parker as covering 3.2 ha). In 1967, Bellwood excavated a second area, some 200 m further up the ridge. This has been designated Skipper's Ridge II (N40/73) and has been fully described elsewhere (Bellwood 1969).

THE EVIDENCE

The standard of excavation and recording at Skipper's Ridge was very high. Only some of the evidence has survived the passage of time, however, and for this reason, a final report cannot be as full and unequivocal as it might once have been. In order that the limitations can be fully understood, I shall list here the evidence used in this report, and indicate other evidence that is no longer available.

The basis for the description of the structural features lies in two full sets of plans. One set is in pencil on graph paper and has all the appearance of original field notes. On this set, all features of all periods are shown, with a few minor exceptions, and details of layer, depth of floors below site datum, depth and diameter of postholes are given; cross-sections through *rua* (underground pits) and through a "tunnel" feature connecting two pits, appear as marginalia. This set was kept in the Anthropology Department, Auckland University, until transferred recently to Auckland Museum. A second set consists essentially of the same outline information without details of depths, redrawn to the same scale in a form suitable for illustration in a published report. Separate plans show the features of each occupation and the combined structures of all occupations. These plans were retained by Parker in Otago until recently. They are now also in Auckland Museum.

In addition to the plans there are three notebooks. Two contain Parker's diary of the excavation from the initial testing until the commencement of the final excavation. These are very full and detailed and contain much useful information. The third notebook contains a summary of some of the portable objects found, and details of stratigraphic columns sampled in May 1959. Copies of the original plans of the test squares excavated in January 1959, together with a cross-section through each of the pits revealed in those squares, were kindly made available by Golson.

Photographic evidence consists mainly of colour slides taken by H. J. R. Brown during the final excavation. Mr Brown retains a number in his personal collection; copies of a representative selection are held in the Anthropology Department, Auckland, together with a small collection of black and white prints.

The whereabouts of some evidence is no longer known, in particular graph books containing all the cross-sections. It is thought that a diary should exist for the final excavations, comparable to those of the earlier investigations of the site. Photographs taken before the final excavations have also been mislaid.

The finds, including artifacts, midden and unworked stone, remained in the Anthropology Department, Auckland, until transferred recently to Auckland Museum. Although there have been some minor losses (noted below in the relevant sections) the bulk of this material, which was meticulously bagged and labelled, has survived in good order. Catalogue numbers refer to the catalogue of the Anthropology Dept., Auckland University, hence the prefix AU. The collection has not been recatalogued with Auckland Museum numbers. Some specimens also have field numbers (not cited here) assigned by Parker.

Although the loss of the cross-sections is much to be regretted, the surviving information provides sufficient basis for a full report. It is worth noting Parker's conviction that all details of stratigraphy and interpretation should be settled before leaving an excavation; on this basis, his assignment of structures to the various occupations is the end product of much serious consideration.

THE EXCAVATIONS

Initial testing of the site took place from January 23 to 27, 1959. A small party under the immediate direction of Parker, and the general supervision of Golson, was detached from a group working at nearby Sarah's Gully. The original aims were simply to determine whether the site had, in fact, been occupied, and to gain, if possible, some idea of its age. The question of a possible relationship between occupation on the ridge and at the Opito Beach Midden (N40/3) in the foredunes below was already considered, but Parker thought that the possibility of demonstrating a stratigraphic connection was low.

Inspection of the ridge top revealed an area near its lower end as most suitable, and visible surface features suggested several more specific objectives. The most obvious surface feature was a shallow ditch or drain running from the ridge top down the slope to the flat below, where it seemed to run parallel with, but not to enter, a rectangular enclosure formed by low ditches and banks. There was also a possible low scarp and some suggestion of extensive subsurface disturbance on the ridge top. Additional aims, then, were to investigate the drain and the scarp, and to determine whether occupation, if present, was widespread, or confined to the lee side of the ridge top.

A base line running approximately north-south across the ridge was laid down and two twelve-foot (3.66 m) squares, which subsequently became D7 and J7 in the site grid, were set out to the east side of it. In both squares parts of large rectangular buttress pits were found and extensions made to obtain cross-sections through the centre of the pits. At the end of the first investigation, it was concluded that there was evidence of substantial and prolonged occupation, which in at least one of its phases was also extensive. Parker believed he could recognise three separate occupations, one at the surface of layer 2, one represented by layer 3, and one within and sealed by layer 4. He believed at least layer 4 to be early and of moa-hunter age. The existence of a layer 3 occupation was at this stage less certain, and the question of continuous or discontinuous occupation was not settled. However, the drain was shown to be associated with layer 3, since it was stratigraphically later than layer 4 and earlier than layer 2. The question of continuous or discontinuous occupation depended partly on whether or not the large layer 4 pits had been filled deliberately, a point on which there was some disagreement.

In April, Parker paid a brief visit to the site and also to the Sarah's Gully pa, then being excavated by Birks. The similarity of the structures at Sarah's Gully pa (N40/10) and settlement (N40/9), and their differences from those at Skipper's Ridge seemed striking, and the relationship between the various sites became a matter for much thought. Already, Parker was considering the possibility that layers 3 and 4 on the ridge paralleled the complex layer at the Opito Beach Midden below, and tending to the view that the layer 3 and 4 occupations on the ridge were continuous.

A few days later, the carbon dates for the Opito and Sarah's Gully middens were announced. This had a considerable effect on the plans for the next excavation at Skipper's Ridge, because the similarity in date of the two beach middens appeared to contrast with the difference in structures at the two areas. The aims for the May excavation thus became: to clarify the relationship between layers 3 and 4, to expose as many structures as possible at both levels, and if possible to recover artifacts from secure associations. These aims could best be served by abandoning plans to link the two initial test squares and concentrating instead on opening a large area on the north side of the ridge, adjacent to D7.

The first major excavation took place between May 9 and 19, 1959. Six squares (D7, D8, E6, E7, E8, F6) and three baulks (D7/8, E6/7, D/E8) were opened. The excavation was not carried down to the natural throughout, owing to lack of time. Most of the structures were exposed, but the complexity in the area of E6 and F6 was not yet fully appreciated. However, the stratigraphy was confirmed, and the principles for establishing the chronology of structures on the basis of the level from which they were cut, their intersections, and a comparison of their fills, were fully worked out.

During the May period, a *rua* discovered by Skipper Chapman elsewhere in the vicinity (subsequently referred to as Les's *rua*) was opened and found to have a slotted door and traces of fern on the floor. A network of shallow "drains" was noted near this *rua*, suggesting the presence of at least two complexes of such "drains" in the general area which have escaped the notice of later recorders.

A brief visit was made early in June to continue filling in the May excavation and to carry out limited further work. Rain prevented full recording on this occasion of the intersection of pit G with pit C-3 (see below, p. 9).

Another brief visit was made in November, and following this, plans for the summer were finalised. A decision to work at both Opito and Sarah's Gully restricted the area that Parker could open at Skipper's Ridge. Thus his plan for the summer, which he was able to carry out successfully, was regarded by him as a necessary compromise and insufficient for a full understanding of the site. In particular, the very small part of the site exposed, meant that any sequence revealed there might not be typical of the site as a whole. Parker was particularly concerned with the problems of continuous versus discontinuous occupation, and of whether two different "cultures" were represented on the site or one. At this stage he had formulated no definite views on the function of any of the structures.

The final excavations began on December 20, 1959, and continued for about five weeks. The squares previously investigated were reopened and the excavation extended. The entire area opened, about 142.5 m² (excluding J7), was taken down to the natural.

Parker's published interpretations (1960, 1962) are based on the results of this final investigation. It was during this period, for which no diary has survived, that he seriously began to consider that some of the pits were dwellings.

STRATIGRAPHY

At the conclusion of the initial test excavation, the stratigraphy of square D7 (Fig. 1) was described as follows.

Layer 1: Sand (probably blown) and humus.

Layer 2: Sand, humus, cultural material.

Layer 3: Sand, shell, cultural material.

Layer 4A: Disturbed natural plus cultural material.

Layer 4B: Similar to 4A but darker in colour. Streaked with discontinuous black patches which revealed sag lines in section.

Layer 5: Natural; waterlaid pleistocene deposits derived from rhyolitic rocks.

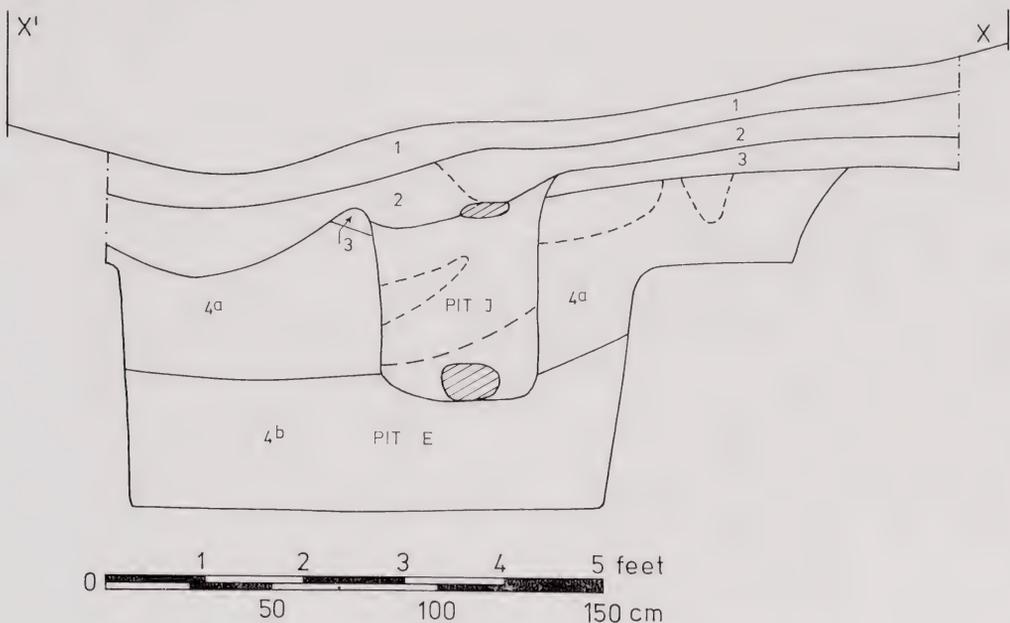


Fig. 1. Principal cross-section, through pit E, Skipper's Ridge, N40/7.

In square J7, layers equivalent to 1, 2, 4 and 5 were recognised.

Discussion elsewhere in the diaries adds the following information.

Layer 1 contained a few scattered cultural items but was generally sterile. Layer 2 contained quantities of *haangi* material. It is several times noted that cultural material was concentrated towards the top of the layer. The separation of layers 1 and 2 was queried by R. N. Brothers and R. C. Green, who considered them both part of the soil profile, with similar lithology. Parker accepted their interpretation, but continued to distinguish two layers because of the inclusions in the lower one.

The extent of layer 3 caused much discussion during the May excavation, as it varied considerably in different parts of the site, at times merging with layer 4 and at other times with layer 2. It contained cultural material, but in several places reference is made to the fact that "layer 3 structures" were cut through layer 3 and sealed with layer 2. At one point Parker defined layer 3 as natural affected by root action, weathering and human activity, which sealed the earliest occupation.

Layer 4 was at first recognised only in the fills of the earliest structures. The existence of layer 4 in other parts of the site, and the question of whether it was merely the upper part of the natural, or sealed the first phase of the occupation, was one of the main problems for investigation during the final excavations. The question was settled by finding (a) small stake holes sealed by it near the central area of the occupation; (b) a shallow scoop with charcoal sealed by it to the south-east of the stake holes; (c) parts of the edges of some of the occupation I pits covered by it. However, layer 4 was not present over all of the site, and in places occupation I structures lay directly under layer 3 (Parker pers. comm.)

The overall stratigraphy of the site at the conclusion of the excavation is described by Parker (pers. comm.) as follows.

Layer 1: Sand and humus, black.

Layer 2: Black sand and humus, cultural material and shell fragments.

Layer 3: Yellow soil, moderately hard.

Layer 4: Similar to layer 3 but darker and harder.

Layer 5: Natural, very hard.

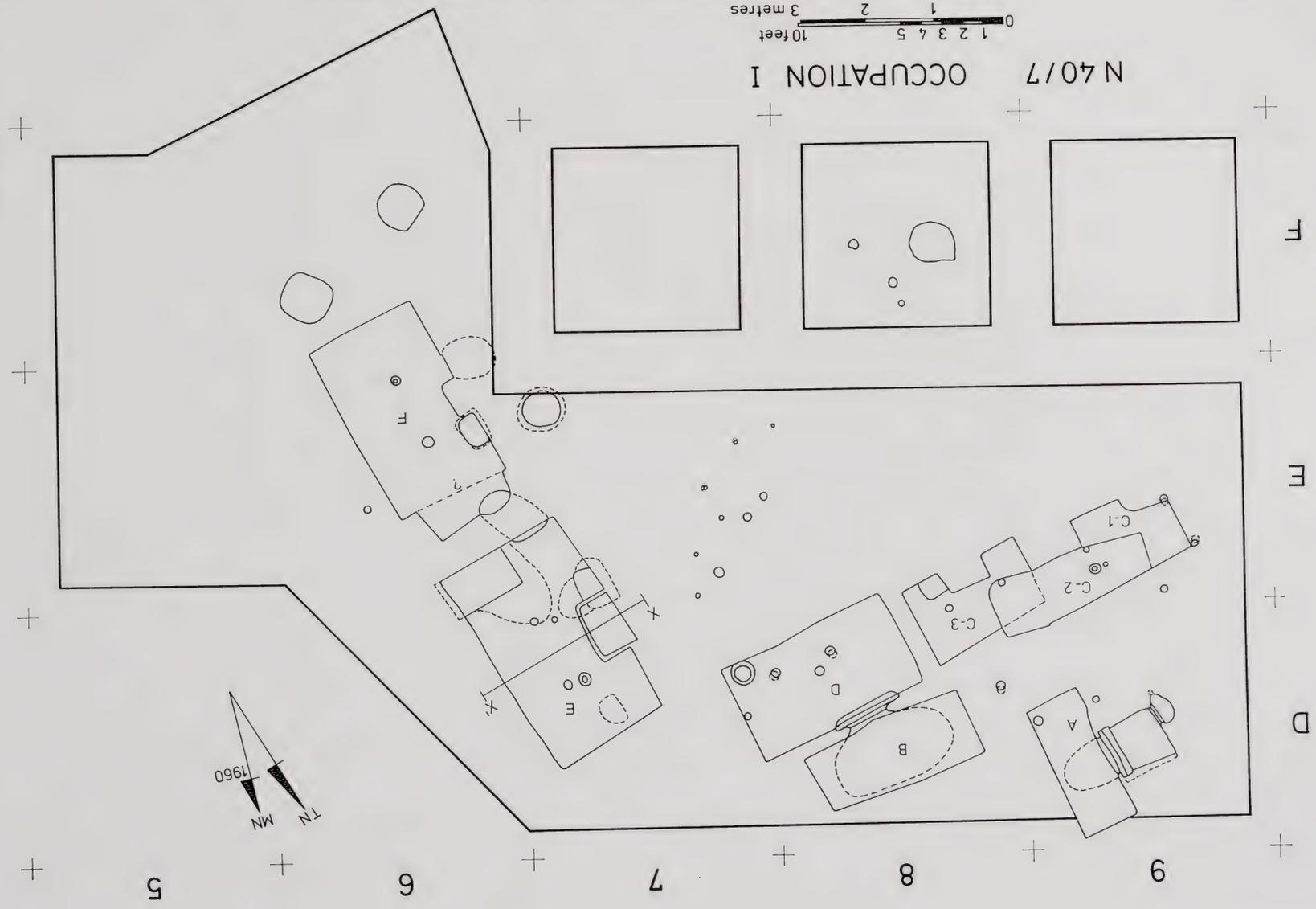
The major problem arising from the lack of cross-sections is the difficulty of defining the precise relationship between the structures and the stratigraphic layers containing the portable evidence. Obviously, portable items from layer 4 are stratigraphically later than the structures from whose fills they were recovered, although they need not be much later, if later at all, in origin. It is not clear, however, whether the layer 3 finds come from the layer through which "layer 3 structures" were cut, from the fill of those structures, or from both. Although stratigraphically later, they could be of similar age to the layer 4 material, or younger. Only the layer 2 material seems certainly to be associated with an actual occupation, and clearly also, to be later than the other material from the site.

The occupation sequence at the site is summarised in Table 1.

Table 1. Correlation of layers and occupations at N40/7.

Stratigraphic layer	Occupation level
1	—
2	IV
3	III
3/4 transitional	II
4	I
5	—

SKIPPER'S RIDGE 7



N 40/7 OCCUPATION I

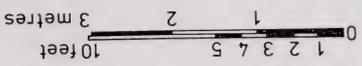


Fig. 2. Plan of structures associated with occupation I at Skipper's Ridge, N40/7.

Parker's original reasons for considering the occupation of the site to span a long period of time were based partly on what can now be considered unwarranted assumptions, current at the time, about climatic change. During the earlier excavations, his view that occupation IV was continuous with, and emerged from, occupation III, and his uncertainty about continuity or otherwise of occupation from layer 4 to layer 3, made it possible to consider the occupation of the site as continuous. During the final investigations, however, the question of continuity between layers 4 and 3 was resolved when occupation I material could be clearly shown to be, in places, sealed under layer 4. This implied discontinuity and suggested that where no layer 4 could be demonstrated, this was probably merely because it had been removed (Parker pers. comm.). During the final investigations Parker (pers. comm.) also abandoned the idea of continuity between occupations III and IV.

THE STRUCTURAL EVIDENCE

OCCUPATION I (*Layer 4*) (Fig. 2)

The most important and substantial structures are assigned to the earliest occupation. They include the large pits, some with buttresses, aligned in pairs around an open space, and the two large underground rectangular pits. The plans of these structures are given in Fig. 2 and some cross-sections in Fig. 3.

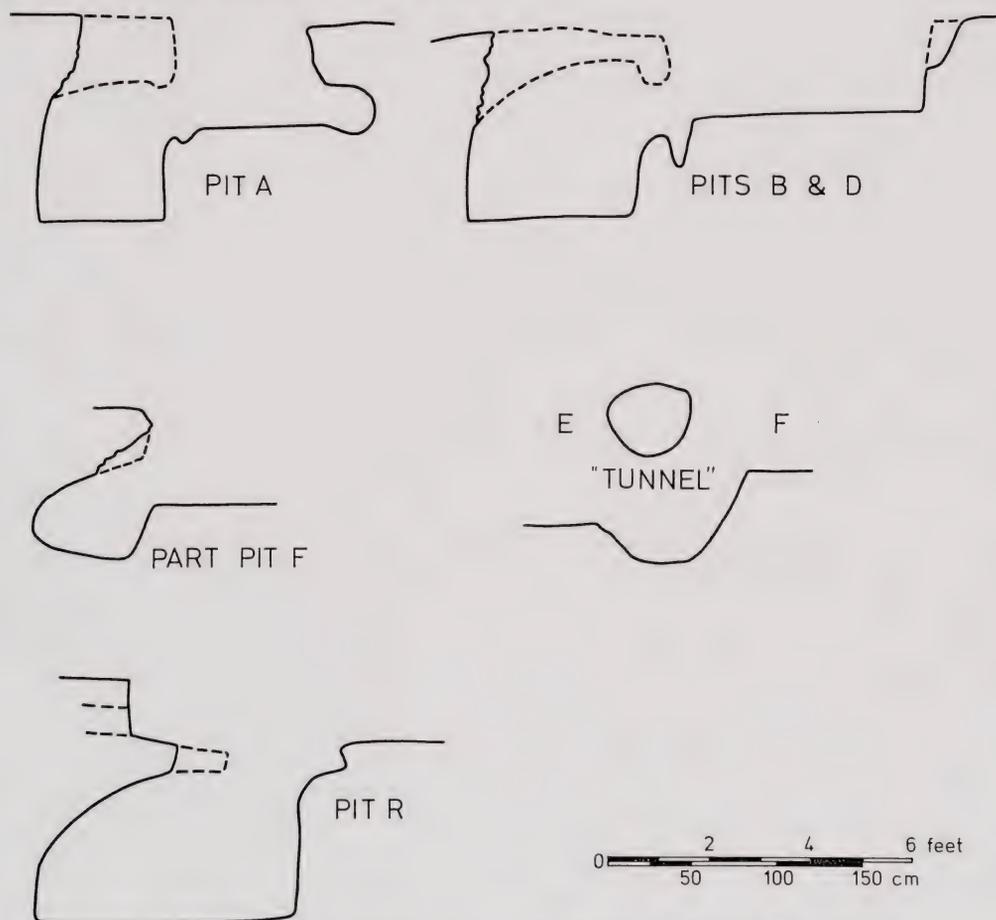


Fig. 3. Cross-sections through subterranean features at Skipper's Ridge, N40/7.

Pit A

A rectangular underground pit, entered from its own rectangular forepit. The floor of the main underground pit was 2.07×0.76 m, and the floor level was 1.67 m below site datum. The vertical-sided forepit was 0.9×0.85 m in plan with a slight shelf on the eroded northern wall. The entrance from the forepit to the main pit was well preserved, with a sill and pronounced slot for a door. At the opposite side of the forepit was a small scooped out cavity. The dotted line on the plan indicates the extent of roof collapse of the main pit.

Pit B

A rectangular underground pit entered from the adjacent pit D. The floor of this pit measured 2.3×0.97 m, and was 1.6 m below site datum and 0.6 m below the floor of pit D. The door slot of this pit was deep, with a maximum depth of 30 cm towards the centre, curving up to 20 cm to the southwest and 25 cm to the northeast. The door sill, 10 cm below the floor of pit D in the centre of the entrance, curved up to 5 cm at the edges.

The area of roof collapse of this pit was much larger than that of pit A, and the fill was complex. The upper part of the fill consisted of a dense midden of scallop shells (*Pecten novaezelandiae*) which protruded well above the level of the pit roof through layer 3 and into layer 2, suggesting that it was much later than the fills of other occupation I structures.

During the May excavation, it was thought that pit B was possibly associated with pit I of layer 3. Complete excavation of pit D revealed the undoubted association between pits B and D. The possibility remains, however, that B was a later addition, perhaps when the primary use of pit D had ceased.

Pit C

It is by no means clear whether one, two or three structures are involved in this complex. All are assigned to occupation I, but the crucial intersection between C-2 and C-3 was complicated by the presence of a later bin pit (G), assigned to occupation II, and an even later posthole. It was this important intersection which was not fully recorded during the June rain. During the May excavation, when squares D8, E8 and baulk were first excavated, it was assumed that C-3 was a complete pit. As can be seen from the plan (Fig. 2), there is some reason to accept this interpretation. However, Groube's version of the plan (1965, p.17) shows structure C as one long pit, rather than 3 smaller ones.

A surviving photograph of the north wall of square E9 before removal of the baulk shows no break in the fill of C-2 from top to bottom. Since it is deeper than C-1, it must either be contemporary with it or later. It is therefore possible to suggest a sequence as follows. First C-1 and C-3, aligned with each other and with D and therefore probably contemporary; then C-2, later and slightly deeper than both, either linking them into one large pit, or more probably replacing them; finally G, destroying the intersection of C-2 and C-3.

On this interpretation, C-1 would have been 1.4×1.2 m in plan with an eroded buttress in the southwest corner. A 15 cm-deep posthole in its eastern wall may have belonged to it. It should be noted that the natural to the west of the pit was heavily scoured by erosion, and the two postholes in its northwest and southwest corners are actually in erosion gullies. Both slant in such a way that it is hard to see how posts set in them could relate to the pit.

Structure C-2, recorded as a depression in the floor of C, would, if it was a separate structure, have measured between 1.5 and 2.4 m in length, with a maximum width of 0.76 m. Two 15 cm-deep postholes and one shallower one could form a slightly off-centre row for this pit.

Structure C-3 measured 1.8×1.2 m and was rectangular with an eroded buttress in the centre of its south wall. It had two postholes, the eastern one 18 cm deep and the western one 25 cm deep. There was also a shallow rectangular depression, 4 cm deep, immediately west of the buttress. The floor of the pit was 90 cm below site datum, but only 36 cm below the ground surface between pits C and D. If C-3 is regarded as a separate structure from C-2 and C-1, it can be seen as similar to, but very much smaller than, pit E.

On the other hand, if pit C is seen as one large structure, it would have been 4 m long with a maximum width of 1.28 m, and would have had three buttresses, an uneven floor, and an unsatisfactory set of postholes for such a large pit.

Pit D

This large rectangular pit without buttress measured 2.6×1.5 m. Its floor was 1.1 m below site datum, and at the southwestern end, the floor was 50 cm below the adjacent ground surface. Pit D was thus noticeably deeper than C-3. Two sloping postholes towards the southern side of the pit are not certainly associated with it. The only two definitely associated postholes are one at the northeast end, 23 cm deep, and one towards the middle of the pit but not on the centre line, 33 cm deep. There was also a "pot hole", 25 cm deep, with sloping sides and a flattish bottom, at the southeast corner.

Pit E

This was the largest and also the deepest structure revealed in the excavation. The floor of the pit measured 3.27×1.9 m and lay 1.45 m below site datum. A substantial buttress in the western wall was in very good condition. Its upper surface, 10-15 cm below the ground surface at the top of the pit, was flat and compacted, which led Parker and Golson to interpret it as a step. The internal arrangements of the pit were complex. An oval depression near the north wall, some 15 cm deep, was thought by Golson to show possible signs of burning. There were also two well defined small bins in the floor of the pit, both about 38 cm deep. One was in the corner formed by the south side of the buttress and the main pit wall, and undercut both the buttress and the pit wall. The other was in the southeast corner of the pit, and undercut the eastern wall slightly. The pit floor was eroded and disturbed on the edge of both bins, the dotted lines on the plan marking the limit of such disturbance. There were four postholes in the floor of the pit. The northern pair were both 20 cm deep, but the smaller of the southern pair was 15 cm and the larger 36 cm. It is possible that all four were required to support the roof. The pit was connected by a "tunnel" with the adjacent pit F; this feature is further discussed below.

Pit F

Although the main outline of this structure is clear, some problems are raised by the presence of three later pits in approximately the same position and alignment. As it was interpreted during excavation, the pit measured 3.29×1.7 m and had a buttress near the centre of the western wall and another at the northeast corner. On the north side of the central buttress there was a small bin, the depth of which has not been recorded, and on the other side of the buttress a small *rua*-like cavity was carved into the wall (Fig. 3). There were two central postholes, the northern 50 cm deep and the southern 41 cm.

An alternative interpretation is to draw the line of the northern wall of the pit from the corner of the presumed "corner buttress" and assign the left-over pit end to the earliest of the layer 3 pits (K). The principal justification for doing so is the presence here of a "layer 3" posthole, clearly marked on the original plan. This, however, would make it impossible for the curiously shaped "tunnel" to connect pits E and F (see below, p. 20). In this interpretation, the length of the pit would be reduced to 2.8 m, although the width would not be affected.

Pit T

Possibly also contemporary with occupation I was a large buttress pit, incompletely excavated in J7, south of the main excavation (Fig. 4). This pit was about 1.67 m wide at the floor, and had a buttress on its long northwest side, and an irregular shelf or step in the same wall towards the northern corner. Three central postholes exposed measured 41, 31 and 43 cm deep. It should be noted that this pit is roughly parallel with pits C and D, and its buttress, like theirs, is on the long side towards the central open space.

Other features

Two "pot holes" in square F6 are assigned to occupation I. Both were about 30 cm deep with almost straight sides. A similar feature in F8 was not clearly assigned to any occupation, but is most probably to be associated with occupation I. A feature in the corner of E7, 46 cm deep with slightly undercut sides, was thought during excavation to belong to layer 2, but is shown on the redrawn plan as a layer 4 feature.

Several postholes in squares E7 and F8 are assigned to this occupation. The row of four postholes in the northwest of E7 was definitely associated with layer 4. Their depths from north to south were 13 cm, 23 cm, 18 cm and 30 cm. The remaining postholes in the square were only provisionally assigned to this occupation; they were all 18 cm deep or less. Three postholes in F8 also belong to occupation I. Depths, from north to south, were 6 cm, 13 cm and 13 cm. There were also isolated layer 4 postholes in E9 (15 cm deep), D9 (23 cm) and D8 (sloping, 41 cm), and one belonging either to layer 4 or layer 3 in E6 (depth not recorded).

OCCUPATION II (*Layer 3/4 Transitional*) (Fig. 5)

Two structures were assigned to this occupation, on the grounds that they were clearly later than all occupation I structures but earlier than those of occupation III.

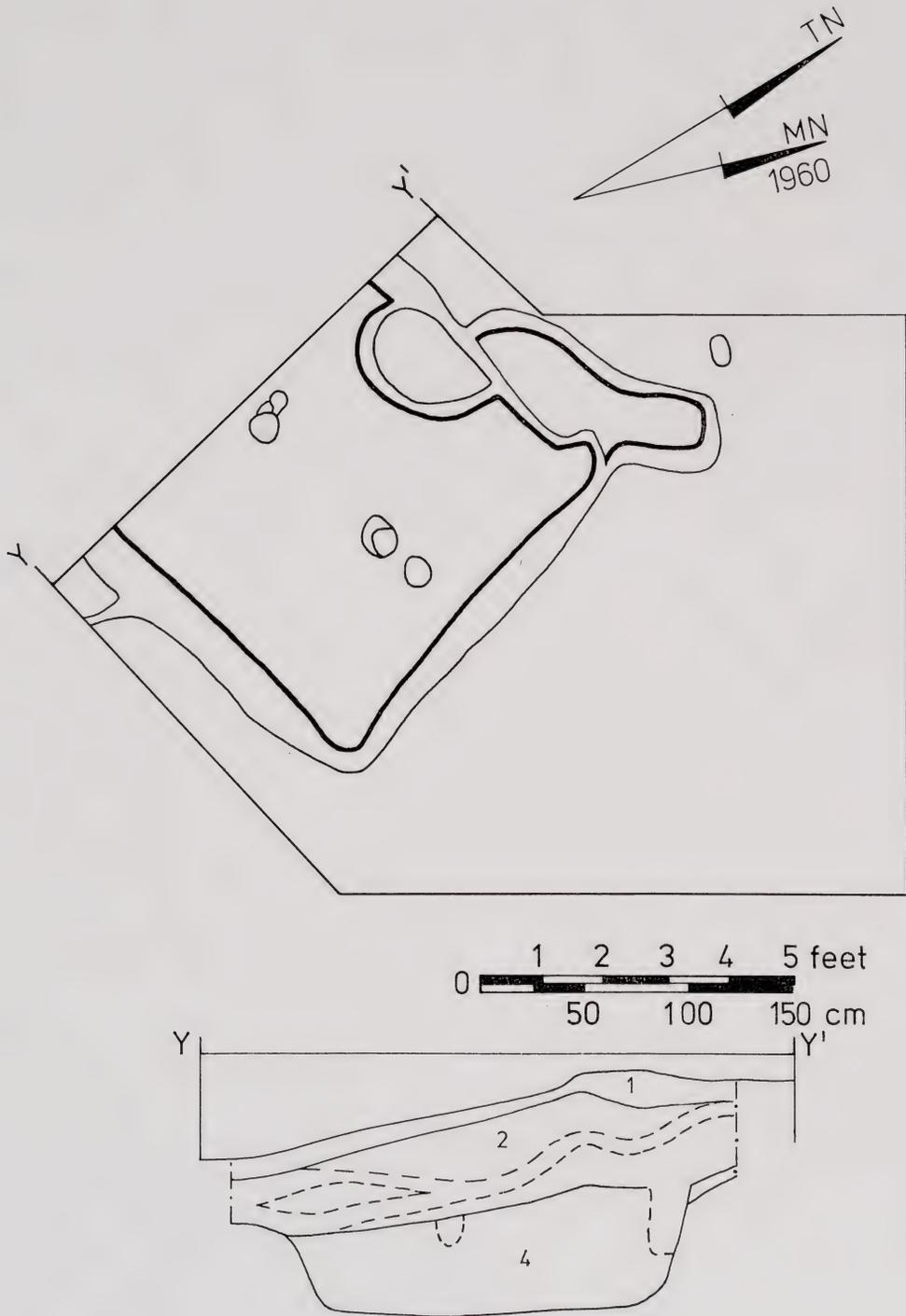


Fig. 4. Plan and cross-section of square J7, Skipper's Ridge, N40/7.

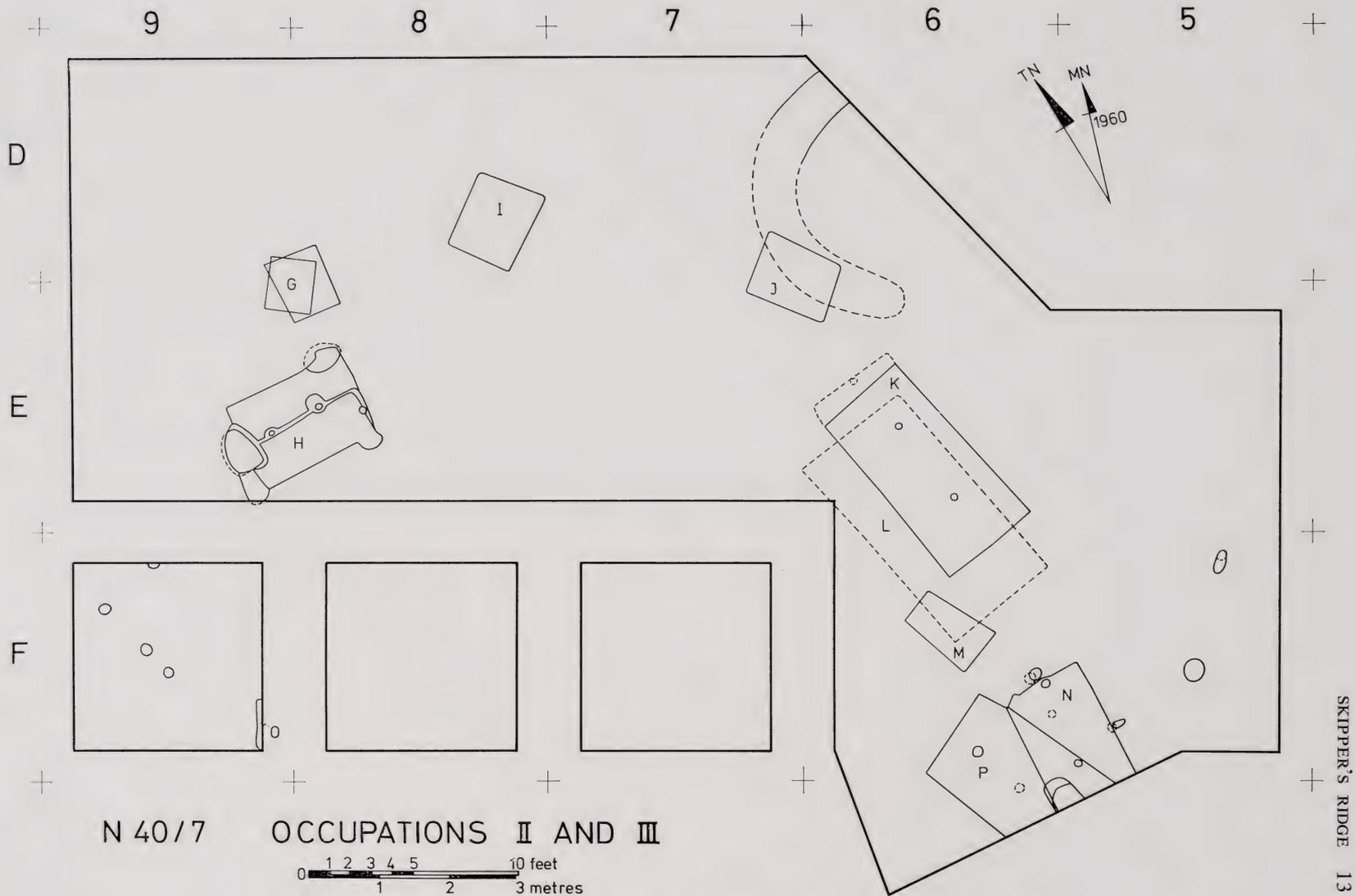


Fig. 5. Plan of structures associated with occupations II and III at Skipper's Ridge, N40/7.

Pit G

The exact position and dimensions of this pit are unclear, as they are shown differently on different plans. There is no doubt, however, that there was only one pit, of bin form, involved. As shown here, the slightly larger outline is taken from a faint sketch on the original plan, and the other, which may well derive from the missing graph books, from the redrawn plan. The dimensions were 90×73 cm (original plan) or 76×67 cm (redrawn). The depth is not recorded.

Pit H

This small pit was one of the most complex on the site. The basic dimensions were 1.86×1.31 m. The floor was in two levels, divided longitudinally; the southern half was approximately 7 cm lower than the northern. Two central postholes were set into the line of the longitudinal step; the larger was 43 cm deep, the other apparently very shallow. There was also a 23 cm-deep posthole near the eastern wall. Other features included a bin-like depression in the centre of and undercutting the west wall, whose floor was 13 cm below the lower floor level of the main pit; a "shelf" or "step" in the southwest corner 20 cm above the lower floor level (reminiscent of a feature in the buttress pit in J7); a scooped hollow in the northeast corner which undercut the corner of the pit and penetrated the wall of pit C-3; and a break in the southeast corner, at first thought to be a drain, which seemed rather to relate to erosion scouring on the natural surface nearby.

Photographs taken by H. J. R. Brown strongly suggest that "pit H" included at least two separate pits. The single eastern posthole would be a central end posthole of a small rectangular pit, the other posthole having probably been destroyed by the depression in the west wall. The two postholes on the line of the "step" would belong to a shallower pit of which only the northern half of the floor survived.

No other features were assigned to this occupation.

OCCUPATION III (*Layer 3*) (Fig. 5)

Although this occupation was referred to by Parker as one of long duration (presumably because in several instances pits intersect or are superimposed), its structures were, for the most part, less substantial than those of occupation I. They include both bin pits and shallow rectangular pits; the evidence of the latter, however, is not as satisfactory as could be wished.

Pit I

A relatively shallow rectangular bin pit, 1.19×0.94 m. The depth was not recorded.

Pit J

A slightly trapezoidal bin pit, 1.15 m long and varying from 85 to 94 cm in width. The floor of this pit was 20 cm above that of the large buttress pit into whose fill it was dug, and it would thus have been about 60-70 cm deep.

Pit K

Pit K was the earliest of the occupation III and IV features superimposed on pit F. As mentioned above, the exact position of the northern walls of pits F and K can be questioned. Pit K was cut almost entirely into the fill of pit F and was apparently similar in depth. According to Parker's interpretation, its dimensions were 2.89 m in length, varying in width from 1.37 to 1.46 m. There were two central postholes, both 23 cm deep. If the alternative plan suggested above is accepted, the length is increased to approximately 3.08 m and a third central posthole (13 cm deep) is added at the northern end.

Pit L

This must have been a very shallow pit, cut partly into natural and partly into the fills of pits F and K. The dimensions were 3.35×1.70 m. No features are recorded. A note on the original plan says "cut 9in [23 cm] below layer 4".

Pit M

Pit M was a slightly trapezoidal bin pit, 1.15 m long, and varying in width from 54 to 73 cm. The maximum depth was 71 cm.

Pit N

This was a shallow rectangular pit, only partly exposed, at the southern end of the excavation. It was more than 1.8 m long and about 1.24 m wide. There were at least two postholes in a central line, one near the northern end and one towards the centre. Both were about 13 cm deep. A third posthole may belong either to this pit or to pit Q. There were also two 20 cm-deep sloping postholes on the ground surface outside, close to the edge of the pit but perhaps not associated with it. This pit intersected pits P and Q. The latter is tentatively assigned to occupation IV and was therefore presumably later than the other two, but there is no indication of the relative ages of N and P, and a distant photograph of the relevant section is unhelpful.

Pit O

A small feature in the southeast corner of F9 was labelled on the original plan as the edge of a layer 3 pit. It is presumably, therefore, another bin pit, with one measurable side of 73 cm.

Pit P

This appears to have been similar to but probably larger than pit N which it intersected. Like pit N it was not completely excavated. It was 1.4 m wide and more than 2.3 m long. There was at least one central posthole 12 cm deep; a second of similar depth may belong either to this pit or to pit Q. An irregular depression in the floor, up to 18 cm deep, probably belongs to this pit, but could belong to pit N. The floor of pit P was marginally shallower than that of pit N.

Other features

A feature of considerable interest was the "drain" visible on the surface. During the excavation of D7 it was noted that it was clearly later than the occupation I buttress pit, and appeared to be cut through layer 3, but sealed by layer 2. During the May excavation its course was traced with difficulty through E6. Towards the south side of the square it was lost in disturbance, although it was thought possibly to

bifurcate at this point. Its course is not shown on the original plan beyond the point of its intersection with pit E, and its position in Fig. 5 is taken from the redrawn plan. Notebook sketches, however, suggest that it made a right-angled turn and continued in a straighter course, parallel to the group of intersecting pits in square E6. Its relationship to these pits is unclear.

The only other features assigned to occupation III are some scattered postholes. The group in F9 were 18 cm deep, except for the southernmost, which was slightly shallower. Features in F5 consisted of a slanting posthole, 20 cm deep, and a small depression approximately 10 cm deep. As noted above, the isolated posthole in E6 may belong to either layer 4 or layer 3.

OCCUPATION IV (*Layer 2*) (Fig. 6)

A maximum of three pits may be assigned to this occupation, which consisted largely of *haangi*. In one publication, Parker referred to the *rua* (pit R) alone as belonging to layer 2, and in another he included pit S also. Both of these are shown on the original plan as belonging to layer 2, but pit Q, not shown on the original at all except for the two postholes possibly belonging to it, is indicated on the redrawn plan as belonging to either layer 2 or layer 3.

Pit Q

The evidence for the existence of this pit appears to be slight. As shown on the redrawn plan it was 1.43×1.16 m. Two shallow postholes 10 and 13 cm deep could either belong to it, or to pits N and P. Pit Q is not shown on the original plan.

Pit R

The underground pit R differed considerably from the earlier pits A and B. The floor was oval in plan with a maximum diameter of 1.58 m. The walls and roof formed a continuous curve except on the southeast side, immediately below the entrance, where the side was vertical. On this side, also, a slight entrance step was dug partly into a layer 4 "pot hole". Three small horizontal holes in the wall of the *rua* at floor level may have related to a framework of some kind on the floor.

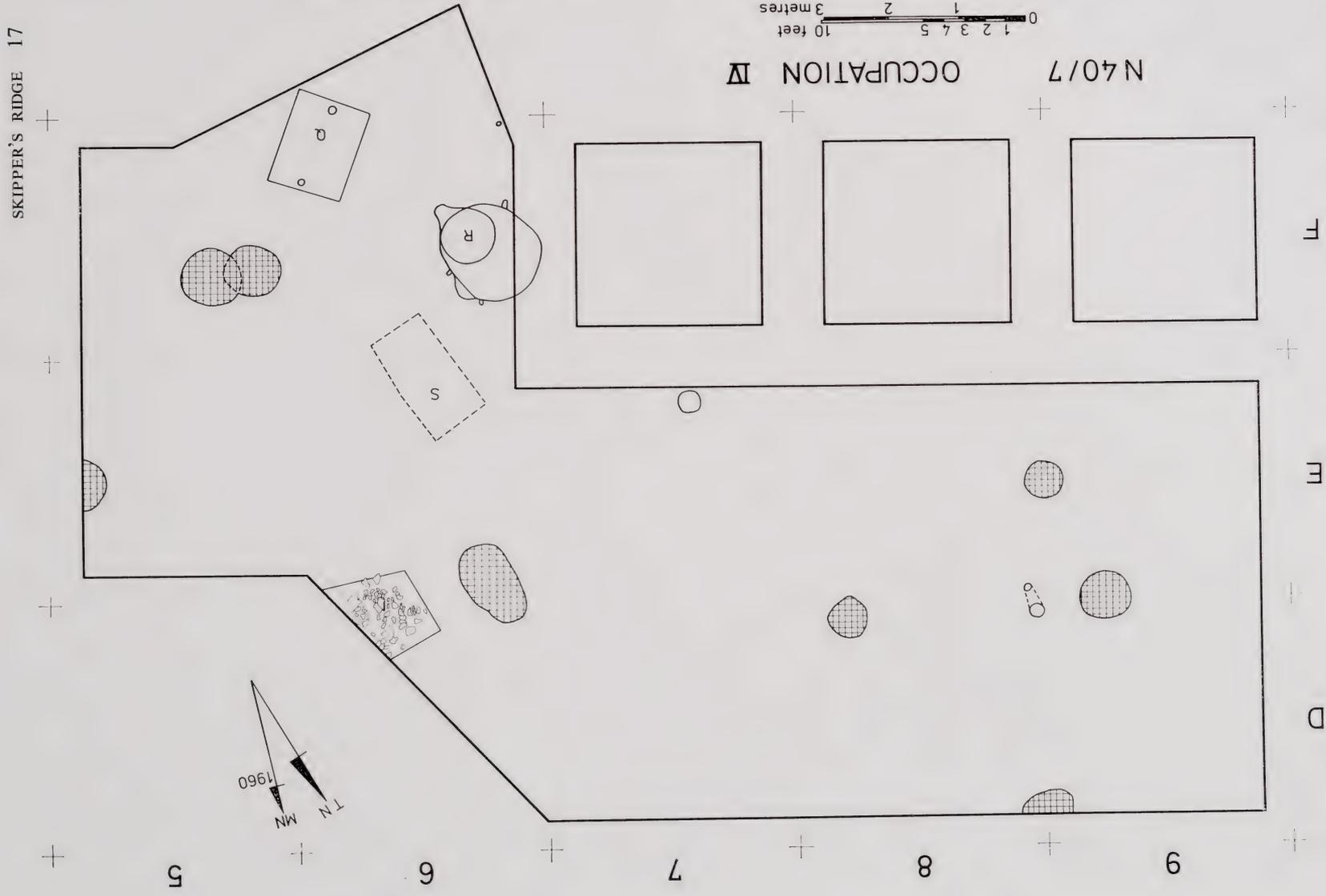
Pit S

Pit S seems to have been the most recent of the complex of intercutting structures which also included pits F, K and L. It is clearly assigned to layer 2 in the original plan. It measured 1.7×0.91 m; no depth is recorded and there appear to have been no postholes.

Other structures

A large number of *haangi* were associated with this occupation. The intensity of cooking activity in the western part of the site is not adequately represented on the plan. In this area there were so many *haangi*, with so many intersections and overlaps, that outlines and depths of *haangi* depressions could for the most part not be recorded. Of the eastern group, the two in F5 were shallow (8 cm deep or less); that in E5 was about 30 cm deep. The oval *haangi* in D/E6 was about 40 cm deep, and appears to have been replaced at a later stage by a shallow circular *haangi* above the southern part of the oval one. The particularly concentrated group of *haangi* stones nearby was in the top of layer 2.

Fig. 6. Plan of structures associated with occupation IV at Skipper's Ridge, N40/7.



Hardly any postholes could be associated with layer 2, suggesting an absence of cooking shelters. There was one 18 cm-deep posthole in F6, and a large and very slanting posthole, 53 cm deep, in the complicated intersection of pits C-2, C-3 and G. The solitary feature in E7 is labelled as a "pot hole" on the redrawn plan and was therefore probably less than 20 cm deep.

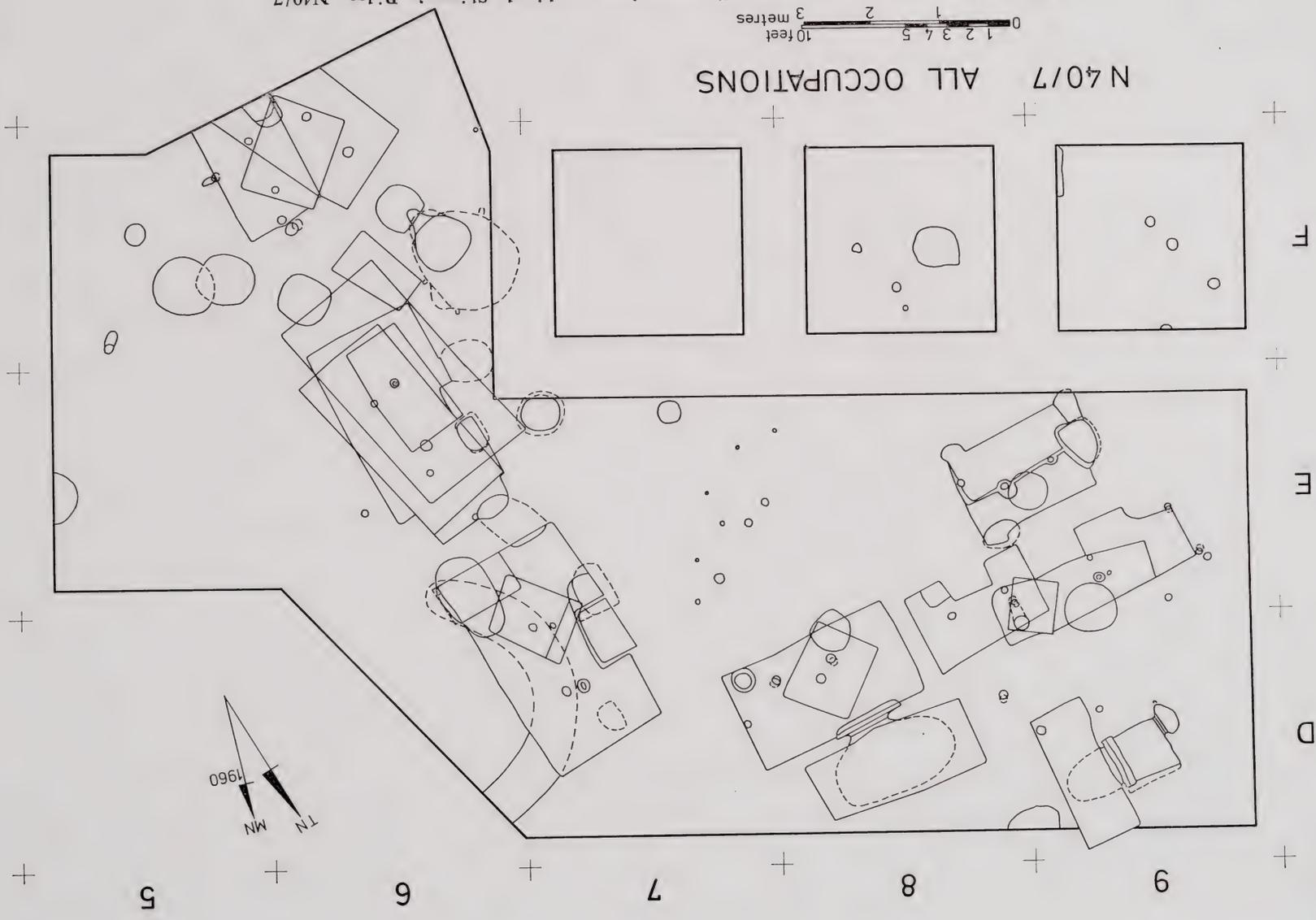
DISCUSSION OF STRUCTURAL EVIDENCE

There have been many changes in interpretation of pits since Parker (1962) suggested a cultural sequence of Archaic A and B based on pit types at Skipper's Ridge and Kumara-Kaiamo. It is now generally accepted that most if not all pits (whether bin pits, *rua*, or rectangular pits) were storage structures rather than dwellings. Moreover, the usefulness of pits as cultural markers has been queried on a number of grounds (Shawcross 1966, pp. 65-67; Bellwood 1969, pp. 203-204). It is no longer possible to see the pits at Skipper's Ridge as a culturally diagnostic assemblage of dwellings with associated storage structures, as was done by several authors in the early 1960s. They remain, however, an interesting and important collection of storage structures, whose long suspected "early" age is now supported by a radiocarbon date (see below).

When the structures of all occupations are combined on one plan (Fig. 7), it is difficult to avoid the conclusion that occupation of the site from earliest to latest features was by a group of people who shared a common idea of how a settlement should be laid out. The plan of structures grouped around a predominantly open space (in which only light surface structures represented by small groups of postholes may occur), is most clearly evident in occupation I, but it is remarkable that all the structures of occupations II and III are aligned with or superimposed on those of the earlier occupation, and even the scattered *haangi* and the few structures assignable to occupation IV avoid the areas left undisturbed in the original lay-out of the first occupation.

The rectangular underground pits and paired side-buttress pits of occupation I are still not matched from any other excavation (although a single side-buttress pit was found on Mt Roskill in Auckland (Shawcross 1962, p. 82)). For whether C-3 and C-1 are regarded as separate, or part of one long structure, they appear to be part of the plan which included C, D, E and F. Only one pit of this group, D, lacked a side buttress, and it is just possible that the unusual slanting postholes in the floor of this pit may have fulfilled a related function to that of the absent buttress. Only one buttress, in pit F, remained in a condition in which it could have been used as a step, albeit a high step; the others were more eroded, although this would not have prevented them from acting as support for an entrance ladder as suggested by Fox (1974, p. 149). If buttresses were related to entrances, these pits were entered from the central open space. It is tempting to see the partly excavated buttress pit in J7 as part of the third side of the same open space. This can only be a very tentative correlation, however, since the three intervening unexcavated squares may contain surprises in both stratigraphy and lay-out. Nevertheless, the possibility remains that the open space was large, and surrounded by structures. Such a space within a settlement might be seen as an early New Zealand example of the secular *marae* found both in Western Polynesia and, historically at least, in New Zealand.

SKIPPER'S RIDGE 19



N40/7 ALL OCCUPATIONS

Fig. 7. Plan of all structures of all occupations combined, Skipper's Ridge, N40/7.

The question of roofing of the occupation I pits, which caused much discussion during the excavation and subsequently, was never fully resolved. It is by no means certain from the existing postholes that even pits E and F shared one roof. The postholes of pit D do not present an easy interpretation; indeed it may be wondered whether pit D in its final form was not, as Groube (1965, pp. 101-102) suggested, a forepit for pit B. It could be further asked whether this large forepit had engulfed a smaller structure similar to C-3. Similarly, it is difficult to design a satisfactory roof over the entirety of structure C, but rather easier to see C-3 and C-2 as separate and consecutive structures with their own roofs, while the roofing of C-1, like that of occupation II's pit H, presents more of a problem.

The presence of floor bins such as those in pits E and F have been noted on other and later sites; in contrast, the mini-*rua*, such as that opening off pit F or the one in the entrance to pit A are unusual, while the "tunnel" between E and F is unique. However, it seems indubitable from its cross-section (Fig. 3) that it was not a tunnel but a ventilation shaft or the collapsed remains of one or more mini-*rua*.

The later pits offer less scope for discussion. The bin pits are simple and vary in depth more than in other dimensions. An indication of the wide distribution of bin pits is given by Bellwood (1969, p. 202). The rectangular pits seem to belong to a very widespread form of pit. At Skipper's Ridge they are all shallow, which may be why they lack buttresses. Indeed all the pits on the site are shallow, even the deepest of the occupation I pits being less than 1 m, and all the others 50 cm or less below the surface of the natural. The three most clearly defined occupation III rectangular pits, K, N and P, have simple single post rows (Fox's (1974) Type 1), but by no means adhere rigidly to Parker's (1962) description of "Archaic B" as having notched posts in the end walls. Nor is there much, if any, evidence of hearths. However, the presence or absence of hearths in pits has long since ceased to be of vital importance, with the acceptance of the function of pits as storage structures rather than dwellings. It may nevertheless be worth placing on record that the only possible hearths in pits discussed as such in the existing records are one each in the occupation I pits E and T, excavated in January 1959, and in both cases the evidence is equivocal at best.

The pot holes are not readily interpreted, although they might well respond to a careful search for ethnographic analogues. It is unfortunate that their context is not clear in all cases, as it would be interesting to know whether they were really restricted to occupation I, or whether they were a continuous feature on the site.

The variation in the size and shape of *haangi* in layer 2 is interesting. It is seldom that sufficient *haangi* are uncovered or the details published, for contemporaneous diversity to be revealed. It is also noteworthy that there is virtually no indication of cooking huts or shelters. Any structures associated with the *haangi* must, if present at all, have been extremely flimsy.

The few postholes associated with layers 3 and 4 are not easy to interpret. They are too shallow to be seen as supporting raised storage structures of any substance, unless truncation of the ground surface is invoked, although light racks or stages could possibly be suggested.

One of the most important features in the early stages of the excavation, the drain, remains shrouded in uncertainty. The balance of the evidence seems to suggest that it was earlier than occupation IV, but its function and ultimate direction remain unclear. Also its relationship to the rectangular "system" of drains on the flat below was not further investigated (Davidson & Green, this volume). An apparent resemblance of this drain to the feature at Skipper's Ridge II, identified by Bellwood (1969) as a potato clamp, is almost certainly illusory.

One final point must be made about the structural evidence from Skipper's Ridge. Parker's stylised drawings of Archaic A and B pits (1962) and Groube's slightly simplified plan of pit C (1965, p. 17) have tended to inhibit, rather than promote, useful discussions of pits between sites. Groube's plan, for instance, led to Shawcross's depiction of side buttress pits (1966, p. 66, pit type D) of a kind certainly not typical of Skipper's Ridge. Groube has himself drawn attention to the misleading nature of Parker's description of Archaic B pits (Groube 1965, p. 83). The point has been made many times before but bears repeating: it is only on the basis of full publication of excavation reports that useful intersite comparisons can be made.

THE PORTABLE EVIDENCE

The cultural layers contained portable objects whose presence is due to human activity. Most of this material was carefully collected during the excavations, and much has survived for analysis. The certainty that some items have been mislaid, and the possibility that other material is missing, however, inhibit detailed statistical treatment. Nonetheless, it is likely that the remaining portable evidence is sufficient to give a reliable indication of what was originally present, and the analysis is here conducted on that assumption. The principal categories of material recovered were shell, unworked stone, and worked basalt, including both waste flakes and tools in the process of manufacture. These were the only materials recovered in sufficient quantity to permit quantitative analysis.

Layer 2 contained the largest amounts of all these categories. Moreover, it is probable that material excavated but not retained would further boost its totals in relationship to other layers. Thus layer 2 contained 50% of all unworked stone retained for analysis and 75% of all shell, but these figures do not include all the *haangi* stone present in the layer, nor the large quantity of scallop shells from the upper part of the fill of pit B, which should probably be included within layer 2. The layer contained 44% (by number) or 43% (by weight) of the worked basalt, other than actual adze pieces. The figures for obsidian and chert were also high compared with other layers.

The distribution of material between layers 3 and 4 was more variable. Layer 3 contained a high proportion of basalt (35% by number or 38½% by weight), but only 21% of the unworked stone and 14% of the shell from the site. Layer 4 had relatively more unworked stone (27%) and less shell (9%). Its basalt assemblage of rather small pieces comprised 17% by number, but only 12% by weight of the site total.

Layer 3/4 transitional, the smallest in volume, contained 2% of the unworked stone and shell collected, while its basalt comprised 4% by number but 6½% by weight of the site total.

Other material included small amounts of pumice, wood, *kokowai* (red ochre) and kauri gum, a minimal amount of bone, obsidian and other stone flakes, two possible shell artifacts, hammers and grinding stones. The various categories of material and their horizontal and vertical distributions are discussed in more detail below.

UNWORKED STONE

This constituent, which has not been subjected to detailed analysis, varies considerably in the kind of stone present. Much of it consists of fire-cracked stone presumed to derive from earth oven cooking, but in some squares there was also a quantity of smooth pebbles of various sizes which may be natural to the underlying material. In a few instances, pebbles were tentatively identified during excavation as moa crop stones.

In layer 4, stone was collected from only a small number of contexts. By far the greatest amount came from the fill of pit A (47% of the total unworked stone from layer 4) followed by pit B (27%) and square F6 (18%). There were smaller amounts from pits E and C and from square D8 outside the area of the pits.

The amount of stone in layer 3/4 transitional was small. Stones came from both pits G and H, but the bulk consisted of pebbles from pit G.

Most of the stone recorded from layer 3 came from three squares, D8 (25%), F6 (23%) and E8 (17%). Amounts of less than 10% of the total for the layer came from F5, D/E8, E7/8, E5/6, D7, F5/6 ext., F9 and F8. The absence of recorded stone from E6, E7 and E8, for example, is likely to be due to collection bias or subsequent loss, rather than actual absence.

More than half the stone collected in layer 2 came from E6 (54%), with a lesser amount from F6 (14%), probably reflecting a concentration of cooking debris in this part of the site. Amounts of 6% or less came from F8, E8 and E9 combined, F9, F5, E7/8, D9, D7, F7, D8 and E5 and baulk.

The above figures should be regarded only as a general indication of the distribution of unworked stone in the site, because of the problems of collection bias and post-excavation misplacement. Nonetheless, the amount of cooking stone present in all layers suggests that although actual *haangi* were found only in layer 2, cooking was being carried out in the close vicinity at most if not all periods of the site's occupation.

The sources and uses of the various kinds of unworked stone present in the site will provide an opportunity for further research.

FAUNAL REMAINS

Only two pieces of bone, both from layer 2, are present in the existing collection. One, from E6, is a fishbone, apparently a vertebral spine, exhibiting abnormal bone growth; the other is a fossilised or partly fossilised fragment of a larger bone from F6, which is almost certainly not related to food consumed at the site.

There is published reference to a dog jaw and tuatara bone from layer 3 (Parker 1960, p. 41). These bones were evidently found together in square D8, and at the time of excavation (May 1959) they were described as earlier than layer 2, but uncertainly of layer 3 or 4 age. A list of finds from the May excavation, in one of the notebooks, also mentions bones from layer 2, 3 and 4 in square D8. It thus appears that the absence of bone from the existing collections cannot be due to its failure to survive under local soil conditions. It is possible that fishbones were not saved during excavation, as prevailing opinion at the time was that they were largely unidentifiable. However, Mr R. J. Scarlett, who was present during the final excavations on the site, assures me (pers. comm. 23 November, 1973) that there was little or no bone found, and certainly no bird bone.

The shells are generally fragmentary, and a rather wide range of species was involved. In view of the small quantities, and the wide range of species, no new analysis has been undertaken. Table 2 presents the results of a percentage analysis by weight of shell species, originally carried out in 1963. Since then, some shells were taken by Bellwood for possible conchiolin dating (no results are available) and there has evidently been some diminution of shell as a result of handling and exposure, for shell weights in 1974 were generally slightly lighter than those recorded in 1963.

Table 2. Percentage by weight of shell at N40/7.

Shell	layer 4		layer 3/4		layer 3		layer 2	
	%	g	%	g	%	g	%	g
<i>Amphidesma subtriangulatum</i>	37		78		29		57	
<i>Amphidesma</i> sp. (fragments)	1				8		5	
<i>A. australe</i>	1.5				2		4	
<i>A. ventricosum</i>					2		1	
<i>Struthiolaria papulosa</i>	10		16		21		15.5	
<i>Pecten novaezelandiae</i>	17		1		18		9	
<i>Lunella smaragda</i>	3		1		5.5		2	
<i>Neothais</i> and <i>Haustrum</i>					7		2	
<i>Alcithoe arabica</i>	8							
<i>Cookia sulcata</i>	6				x		1.5	
<i>Perna</i> or <i>Mytilus</i> sp.	7				x		x	
<i>Cellana</i> sp.	3.5		2		x		x	
<i>Haliotis iris</i>	2				1.5		x	
<i>Maoricolpus roseus</i>	1.5				x		x	
<i>Paphirus largillierti</i>					x		1	
<i>Dosinia anus</i>					x		x	
<i>Nerita melanotragus</i>	x				x		x	
<i>Crassostrea glomerata</i>	x							
<i>Chione stutchburyi</i>					x		x	
<i>Zediloma</i> sp.	x				x		x	
<i>Scutus breviculus</i>	x							
<i>Glycymeris laticostata</i>							x	
<i>Cominella</i> sp.					x		x	
<i>Tawera spissa</i>							x	
Chiton			2					
unidentified	1				4		1	
Total weight		578		118		815		4483

x = less than 1%

The range of shell species at Skipper's Ridge is similar to that at some beach middens on the Coromandel coast and Great Barrier Island (Law 1972, pp. 95, 107; Davidson n.d., p. 125; Leahy 1974, p. 65), and reflects exploitation of several different zones, only one of which is immediately adjacent. The small quantities, however, make it unwise to regard the shell recovered as a firm indication of the diet of the site's inhabitants. Moreover, any apparent changes of quantity of various species through time must be regarded with caution, because the samples from different layers are so different in size. The fragmentary nature of much of the shell inhibits studies of seasonality or shell population structure.

The difference in bone remains at Skipper's Ridge and at adjacent beach middens which have a similar range of shell species is striking. It is regrettable that details of faunal remains at the Opito Beach Midden (N40/3) and Sarah's Gully (N40/9) are not available. However, the point may be made by comparing Skipper's Ridge (with one dog jaw, remains of one tuatara, and possibly a small amount of fishbone), with a midden further south in the same bay, N40/2, for which a faunal analysis (including birds, moa, dog, rat, tuatara and cetaceans) is available (Jolly & Murdoch 1973, pp. 71, 72). In view of the age of Skipper's Ridge suggested by radiocarbon and by obsidian hydration, it is not possible to attribute these differences to an "early beach midden/late pit complex" dichotomy. Nor, in view of the consistent evidence of cooking and other domestic activity at all levels at Skipper's Ridge, is it possible to see the site during the earlier occupations as a specialised storage area lacking living debris. The small amounts of shell cannot represent more than a fraction of the food probably consumed during any occupation, and it seems likely that most food refuse was dumped in a particular area, perhaps over the edge of the ridge. Even so, the complete absence of bird and mammal bone (other than the single dog jaw reported) suggests that the inhabitants of Skipper's Ridge, whether because of convenience, seasonal occupation changes or ritual prohibitions, to name but a few possibilities, preferred to butcher birds, mammals and fish and deposit remains indicative of their consumption, somewhere other than at Skipper's Ridge.

OTHER NON-ARTIFACTUAL REMAINS

Pumice was collected in small quantities from all layers. Only a very small amount was found in layer 4, from the fill of pit B. Small pieces were more widely distributed in layers 3 and 2, and there was one very large piece (weight 194 g), possibly artificially squared off, from E9, layer 3. Except for this piece and one small, possibly shaped piece from layer 2, none of the pumice showed any sign of working or use.

Two small pieces of kauri gum were found in layer 2. There was also one possible piece of red ochre. Neither type of material was found in the earlier layers.

Fragments of very decayed wood, on the other hand, were found only in layer 4, and were thought to be associated with pits B and E. The fragments from D8 appeared possibly to be part of the door frame or door of pit B; those from pit E, found at the bottom of the fill, were thought to belong to the posts or roof.

ADZES AND ROUGHOUTS

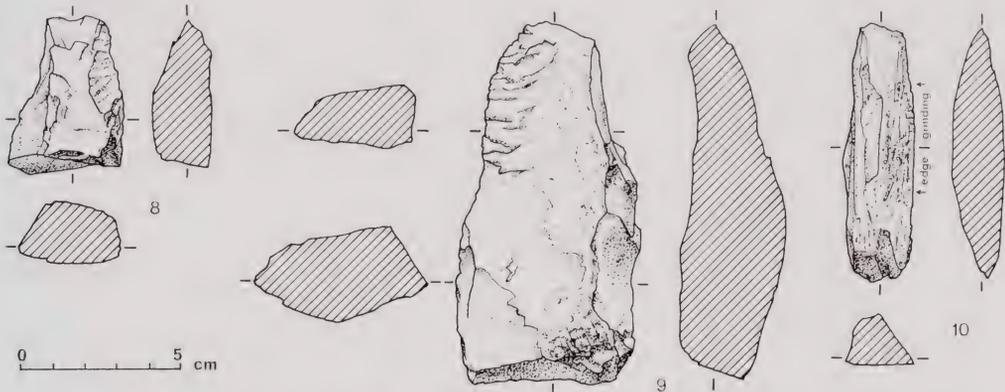
Only one complete adze was found, although there are several flakes or chips from fully or partly ground adzes. There is a substantial number of broken or unfinished roughouts. Some of these are in an advanced state of preparation, so that their intended

form is clear, but others are less advanced, and the line between roughouts, and cores which may or may not be roughouts, is rather arbitrarily drawn. This section is primarily concerned with recognisable adzes and roughouts, but reference will also be made to ground and hammer-dressed flakes and pieces which are further discussed below.

Layer 4

Evidence for the use on the site of finished, and indeed highly ground stone tools, comes from a small chip from an adze made apparently not of Tahanga basalt, but of what is possibly an imported baked argillite. This fragment, AU1535/1, showing the intersection of two highly ground surfaces at an angle suggesting it came from an adze of rectangular section, was found in the lower part of the fill of pit E.

From the same pit fill came part of a small broken roughout, AU 1535/2 (Fig. 8). This is of irregular quadrangular section, with partial grinding on what would be the front and back surfaces.



Figs. 8-10. Artifacts from layer 4. 8. Adze roughout butt, AU 1535/2. 9. Adze roughout, AU 1536/5. 10. Basalt flake tool with extensive use wear, AU 1536/6.

A larger roughout, AU 1536/5 (Fig. 9), was found in the fill of pit C-3. This piece retains a strip of the weathered outer cortex of the rock on one surface, and has an area of hammer dressing on the opposite surface. It appears to be broken off at the bevel end, where, however, traces of hammer dressing are also present. It is not clear whether this specimen has been used as a hammer stone, as suggested by Bellwood (1969, p. 211) or whether the snapped and hammered end is part of the manufacturing process.

In addition to these items there are one flake showing grinding, and two core-like pieces from layer 4. The flake, from pit A, appears to be from an adze, and one of the cores, AU 1538/8, from pit B, may be a broken piece of a small adze roughout of quadrangular section.

A possible adze fragment, AU 1543/1, was also found in J7, in a posthole of the buttress pit T, a context which would make it probably contemporary with or earlier than the layer 4 assemblage from the northern part of the site. It could be the central part of an adze of quadrangular section and is flaked and partly ground, but also appears to have been water rolled.

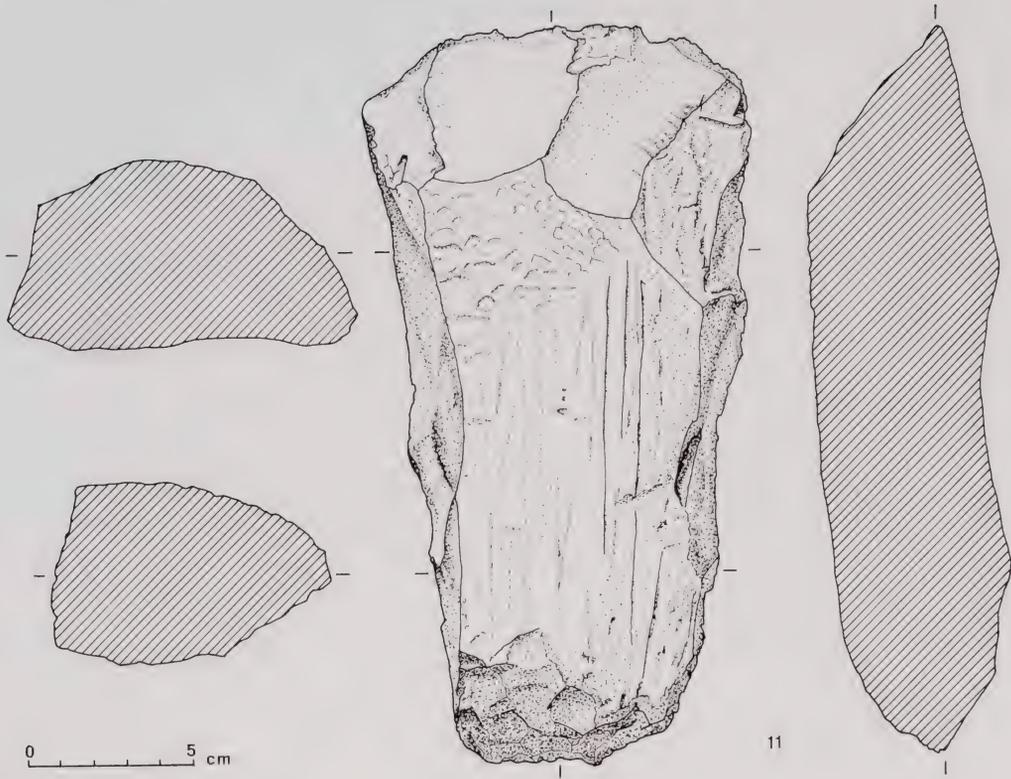


Fig. 11. Large adze roughout, AU 1533/1, layer 3/4 transitional.

Layer 3/4 transitional

A large heavy roughout, AU 1533/1 (Fig. 11) was found in the fill of pit H. It is simply made, with a minimum number of flakes removed, and an area of weathered cortex remaining on the back. Its maximum dimensions are length 21.1 cm, width 11.6 cm, thickness 7.1 cm. The width and thickness at the mid-point are 10.1 and 6.5 cm. The weight of this specimen, 2157 g, makes any analysis by weight of adzes and adze fragments, rather misleading.

A piece of worked basalt, AU 1533/15, from the same pit fill may be the broken bevel end of another large roughout. A surface formed by one flake scar meets a partly ground surface at an acute angle. If this is indeed a bevel fragment, it would be from a specimen with a cutting edge between 8 and 9 cm wide. From the same context came two fragments of cores which may be broken pieces of roughouts.

Layer 3

Twelve items from layer 3 have been classified as possible or probable adze pieces. There are also two pieces and one flake showing signs of grinding, and six core-like pieces, which are included in the analysis of other basalt items.

Four possible roughout fragments were found in square D7. Specimen AU 1435/20 (Fig. 12) has been worked from a single flake, and one long surface is formed by the flake scar. A patch of weathered cortex remains on the opposite surface. What is presumably intended to be the bevel is steeply flaked. There is an area of hammer dressing on a protuberance from one side near the "bevel end". The hammer dressing may be due to attempts to reduce this protuberance. Specimens AU 1435/21 (Fig. 13) and 1435/22 (Fig. 14) are also made on single flakes, and each has one large surface formed by the flake scar. AU 1435/21 is one half of a flake which has probably snapped at or near the centre. It has slight signs of grinding on a median ridge along its long axis. AU 1435/22, which does not appear to be broken but has no definite sign of a bevel or cutting edge, has some grinding on the main flake scar surface. The final specimen in this group, AU 1435/23 (Fig. 15) is not made from a single flake. It is otherwise similar in size and extent of working to AU 1435/20.

One of two specimens from D8, AU 1442/13 (Fig. 16), is rather similar to the group from D7. Its companion, however, AU 1442/14 (Fig. 17), is the bevel end of a fairly small adze with triangular section, apex up, which was fairly close to completion. It has grinding on the front medial ridge, and on parts of the bevel and lower back surfaces.

Two other examples from layer 3 also have triangular sections, but their intended final form is less certain. AU 1447/1 (Fig. 18) from D7/E6 (presumably from the layer 3 seal of pit E), is the butt end of a rather irregular specimen, whose apex might have been intended to face either way. AU 1451/32 (Fig. 19), is a carefully worked and so far apparently unbroken example with trapezoidal rather than triangular cross-section. Further work might have reduced it either to triangular with apex down, or to a more quadrangular-sectioned specimen. It has as yet little sign of a bevel, the bevel end being steeply flaked. Traces of grinding appear on the front and a small area of cortex remains on the back.

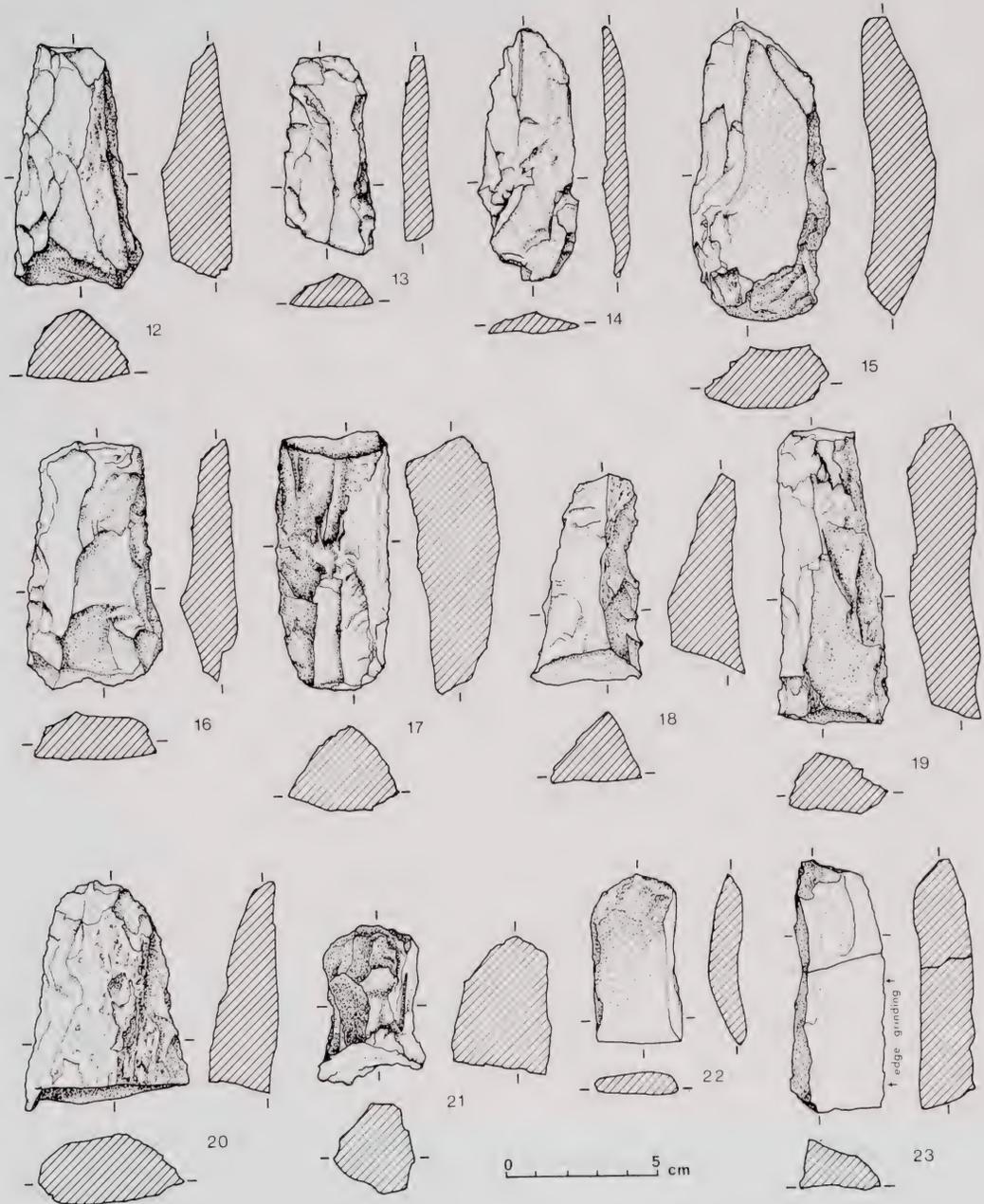
From the same square came a rounded, hammer-dressed butt end of a specimen of rounded quadrangular section, AU 1451/31 (Fig. 20). A considerable area of cortex remains on one surface, but hammer dressing is quite extensive on one side.

Another extensively hammer dressed butt end, AU 1449/22 (Fig. 21), with slight evidence of grinding, was found in F5. This specimen is quite thick in relation to its width, but it is too small for the overall form to be determined from the existing fragment.

A complete, well-ground small adze, AU 1443/6 (Fig. 22), was found in E6. It has an irregular rectangular cross-section, a fairly short bevel and a pronounced facet on the junction between front and bevel surfaces. Its length is 5.5 cm, and maximum width and thickness are 2.8 and 1.4 cm.

In addition to these items, a roughout fragment weighing 111 g is listed from D/E9. This specimen was included in the 1963 analysis but has since been misplaced.

Two specimens from layer 3, AU 1435/20 and 1442/14 have been examined in thin section by S. Best (pers. comm.) and found to be typical of Tahanga basalt.

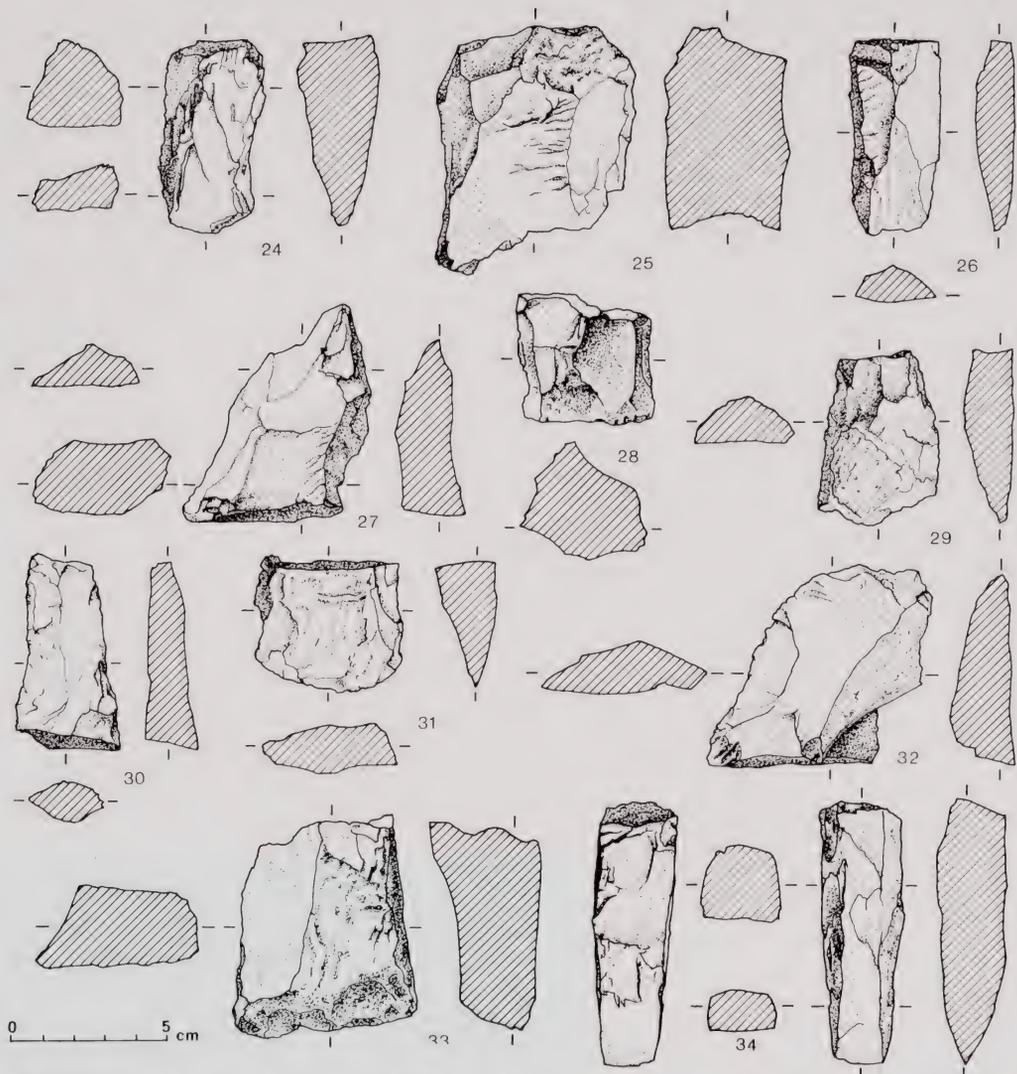


Figs. 12-23. Artifacts from layer 3. 12-21. Adze roughouts. 12. AU 1435/20. 13. Broken roughout, AU 1435/21. 14. Roughout (?), AU 1435/22. 15. AU 1435/23. 16. AU 1442/13. 17. Bevel end, AU 1442/14. 18. Butt end, AU 1447/1. 19. AU 1451/32. 20. Butt end, AU 1451/31. 21. Butt end, AU 1449/22. 22. Adze, AU 1443/6. 23. Basalt flake tool with extensive use wear, AU 1450/19 & 44.

Layer 2

Eleven specimens which appear to be parts of roughouts were found in layer 2. There are also two flakes with grinding and one with hammer dressing, and five pieces with grinding. Two of the latter are certainly broken chips off finished and well ground adzes. Five core-like pieces were found, some of which may be parts of roughouts. In J7, layer 2, a ground flake was found. The few flakes from this square have been excluded from the general layer 2 analysis.

Two rather battered roughout fragments were found in D7. AU 1213/1 (Fig. 24) is the bevel end of a small roughout, probably intended to be of triangular section,



Figs. 24-34. Artifacts from layer 2. 24-33. Adze roughout fragments. 24. Bevel fragment, AU 1213/1. 25. AU 1213/2. 26. AU 1270/67. 27. AU 1270/55. 28. AU 1418/14. 29. AU 1268/3. 30. Butt end, AU 1430/4. 31. AU 1432/11. 32. AU 1308/1. 33. AU 1433/1. 34. Adze fragment, bevel part, AU 1421/52.

apex upwards. AU 1213/2 (Fig. 25) is apparently the central section of a larger and fairly thick quadrangular-sectioned roughout.

Three fragments came from E6. AU 1270/67 (Fig. 26) is, like several specimens from layer 3, a small item made on a flake with a patch of cortex on the opposite surface. AU 1270/55 (Fig. 27) is probably the butt end of a roughout, but not certainly so. The central break is not at right angles to the long axis of the artifact, giving it an asymmetrical appearance that is more apparent than real. AU 1418/14 (Fig. 28) is the central section of a fairly thick small roughout, with a tiny area of ground surface. Also in E6 was AU 1418/15, a small piece with three intersecting ground surfaces, evidently broken from a ground and finished adze.

From the adjacent E5-6 baulk and square E5 came another fragment which is probably part of a roughout. Like AU 1270/67, this specimen, AU 1268/3 (Fig. 29), is made on a flake, and has some cortex remaining on the opposite surface. It has a thicker oval section, however, and there is some suggestion that the striking platform of the original flake was on the side rather than the end of the developing roughout. Another small piece from a finished adze, AU 1321/3, was also found in this area. In addition to the two pieces from finished adzes, there were three other items with some grinding (two flakes and one chip) from E5 and E6, suggesting that this part of the site was probably an area of tool use during the formation of the layer 2 deposit.

Specimen AU 1430/4 (Fig. 30) from F5 is the butt end of a small adze of indeterminate form; the cross-section at the break is diamond shaped. From F5 or F7 is a small bevel fragment, AU 1432/11 (Fig. 31), also indeterminate, but possibly intended to have a curved cutting edge. There is an extensive area of cortex on one surface. A very rough core fragment from F5, AU 1308/1 (Fig. 32), may also be part of a broken and rejected roughout.

Specimen AU 1433/1 (Fig. 33) from F8 is the hammer-dressed and partly ground central part of a thick quadrangular-sectioned specimen. S. Best has examined this specimen and reports that it is made in a particularly coarse-grained variety of Tahanga basalt.

The final specimen from layer 2, AU 1421/52 (Fig. 34), is the bevel part of a small well finished adze of thick trapezoidal section, front narrower than back. In the relationship of cutting edge width to thickness it is similar to hogbacked adzes, although it cannot be described as triangular in section.

Discussion

Few of the items described above were considered "diagnostic" at the time they were excavated (and very few of them could safely be classified according to Duff's (1956, 1959) typologies). Nonetheless, they form a substantial corpus of tools from the site. All except the highly ground fragment from layer 4 are made of Tahanga basalt. It is unfortunate that no detailed study has yet been made of manufacturing techniques used at Tahanga against which the Skipper's Ridge assemblage could be assessed. Several features which occur at Tahanga may be noted, however, in particular the regular if minority occurrence of adzes of all sizes made on single flakes or blades, and the fairly

frequent presence on roughouts of the distinctive weathered cortex of the stone. This, as Best (n.d.) has shown, may be related to the structural properties of the stone. Moreover, as is the case with most assemblages derived from Tahanga, both quadrangular- and triangular-sectioned specimens in a fairly advanced state of manufacture are present, together with rougher and less finished specimens.

Although there are three triangular-sectioned specimens from layer 3, it is not certain that they comprise two examples of Duff's type 4a and one of type 3 (Parker 1962, p. 223). Moreover, the single complete adze from layer 3 can hardly be safely described as belonging to Duff's type 2b. It must rather be seen as one of the small untanged quadrangular adzes which appear to have been present in Coromandel assemblages from an early date, and is very similar to a specimen from layer 5 at Hot Water Beach (N44/69) for example (Leahy, 1974, p. 48). This is perhaps not the place to discuss the questions of whether a 2b adze can be made from Tahanga basalt, and if not, whether the distinction is in the mind of the adze typologist or of the Polynesian tool maker. But it must be asserted that just as the adze assemblage from Skipper's Ridge cannot be confidently identified as Archaic in Golson's (1959) terms by the presence of indisputably Archaic types, so it cannot be regarded as Classic Maori by the indisputable presence of Type 2b (cf. Bellwood 1969, p. 204).

The sample of roughouts from the various layers at Skipper's Ridge offers no convincing evidence of change through time. Detailed study of large numbers of adze roughouts of Tahanga basalt from dated contexts may eventually reveal changes in manufacturing techniques and/or in the adzes produced. At present, however, there is little indication of such change, and no certainty about the length of time that Tahanga was in use. It seems likely, nevertheless, that the Tahanga quarry was used, at least for local supply, throughout the span of New Zealand prehistory, and possible that manufacturing techniques employed there changed little if at all through time. The lack of any obvious change in the assemblage at Skipper's Ridge, therefore, cannot be used to argue that all four occupations on the site succeeded each other within a short period.

BASALT FLAKES AND PIECES

The remaining basalt items from the site comprise an assortment of flakes and material derived from flaking, and a small number of cores.

The distribution of basalt on the site differed from layer to layer. Most of the layer 4 assemblage came from pit B (78% by number or 65% by weight). From pit A came 11% (16% by weight) and there were lesser amounts from pit E, pit C-3 and squares E9 and F8.

In layer 3, the largest collection of basalt came from F5-6 ext. (28% by number, 30% by weight). Next came D-E8 (16%, 13%) and F5 (11%, 8%), then D7 (8%, 13%), D8 and F6 (8%, 7%) and F8 (8%, 2%). Lesser amounts were collected from F9, E5-6, E7-8, E8 and E6-7.

In layer 2, the largest concentration was in E6 (44%, 40%), followed by E8 and E9 combined (20%, 24%) and F5 (11%, 9%). The remainder was fairly evenly divided between most remaining squares, although there is none from D7 or E7.

The above figures should be taken only as a general guide, as there are some discrepancies between figures recorded in 1963 and 1974, as well as the possibilities of collection bias and loss between 1959 and 1963.

Although at first glance most or all of the material appears to be "flakes", a substantial proportion lacks clearly defined striking platforms and actually consists of broken pieces, rather than complete flakes. This distinction has been recognised in the preliminary analysis of the material. The numbers and weights of each category in each layer are shown in Table 3.

Table 3. Analysis of the basalt assemblage, N40/7.

	Flakes		Pieces		Cores	
	no.	wt. (g)	no.	wt. (g)	no.	wt. (g)
layer 2	82	1781	114	892	5	365
layer 3	78	1932	76	639	6	253
layer 3/4 trans.	12	340	4	27	2	113
layer 4	53	663	21	171	2	69

The presence of grinding or hammer dressing on both flakes and broken pieces and the presence of weathered cortex were noted. Items were examined briefly by eye for evidence of use, but not microscopically unless suggestions of use wear had already been detected.

Of 52 ordinary flakes from layer 4, one from pit A had a ground surface suggesting it was derived from a finished adze. None of these flakes showed signs of use. Nine flakes, with considerable size range, had weathered cortex. There was also, from E8, an exceptional elongated flake, AU 1536/6, with very extensive edge grinding or polish on one long edge and some surface grinding (Fig. 10). There were 21 broken pieces, a few with cortex and none with signs of use. A piece from a highly ground adze (described above) is probably not basalt. One of the two cores, as mentioned above, may be part of a small roughout. The other, AU 1535/3, apparently part of a snapped core of blade-like proportions, has one edge which may have been deliberately retouched to make a working edge.

There was relatively little basalt from layer 3/4 transitional. Three of the largest flakes are from pit G and the remainder of the material from pit H. Two flakes have cortex, and one of the smaller flakes from pit H shows possible evidence of use.

The 78 flakes from layer 3 include a large broken blade-like flake with grinding or polish on one long edge. It is actually in two pieces, but as these fit together and were found in the same square (F5-6 ext.) they are treated as one item, AU 1450/19 & 44 (Fig. 23). Two other flakes have edges indicating possible use and one has slight signs of grinding. Fifteen have cortex. Two of the 76 broken pieces have grinding and several have cortex.

Parker's references to a "rectangular stone knife of good quality" (1959, p. 19; 1960, p. 40) suggest that it must have been found in the fill of pit J assigned to layer 3. No item from this or similar context which would fit the description is now identifiable, and it is assumed to have been mislaid.

Eighty-two flakes from layer 2 include two with grinding and one with hammer dressing. Six show signs of possible use; two of these, on which use marks are almost certainly present, are long straight blade-like flakes, although one has snapped so that only a part survives. There are five ground items and several with cortex among the 114 pieces. In addition to the five core-like pieces listed, there is one other doubtful core, which was not included in the analysis because it may not be man-made.

As can be seen from Table 3, the broken pieces in all layers are on the average lighter (and smaller) than the true flakes, as is only to be expected. Some pieces are clearly the distal fragments of snapped blade-like flakes, although it has not so far proved possible to match these with snapped flakes, except in the case of AU 1450/19 & 44 from layer 3.

The length/breadth dimensions of flakes from each layer are shown in Fig. 35. The tendency of layer 4 flakes to be smaller and less variable in proportion may be because nearly all of them came from one pit fill, and may have resulted from one piece of work, whereas the flakes from other layers were more widely scattered about the site. The dimensions of flakes from Skipper's Ridge can be compared with those from other sites, including Bellwood's site further up the ridge (Bellwood 1969, p. 208), a coastal midden at Whangamata (Shawcross 1964, p. 18), where the material is almost certainly Tahanga basalt, and two sites on Motutapu Island, where the flakes are of greywacke (Leahy 1970, p. 76; Davidson 1970, p. 52). Although the flakes from Skipper's Ridge I tend to be smaller than those of Skipper's Ridge II, they also tend to be larger than those from the other three sites. It seems likely that although they are mostly waste flakes from core tool production they represent either an earlier stage in the manufacturing process, or the production of larger tools.

No analysis of such features as edge or striking platform angles of the flakes has been undertaken, in view of the probability that most of them are waste flakes from core tool production. Any further analysis should probably form part of a study of adze manufacture on this and other sites using Tahanga basalt, now that the flaking properties of the rock are better understood (Best n.d.).

In regard to use, as well as size, the flakes from Skipper's Ridge I differ from those of Skipper's Ridge II, where 33 out of 96 flakes analysed showed use wear (Bellwood 1969, p. 208). The two obviously and extensively used flake tools are both of blade-like proportions and have one or more long straight edges showing the characteristic polish indicative of considerable wear. Flakes with possible use wear are absent or rare in all layers, but the largest number is from layer 2, possibly indicating a trend towards an increase in the sort of activities later performed at Skipper's Ridge II.

OBSIDIAN

The obsidian assemblage from the site is small. There were originally three pieces of obsidian from layer 4, but these were used by Green for hydration rim analysis, as were two from layer 3 and three from layer 2. There is one piece from J7, layer 2, and one from "Les's *rua*" which are omitted from the analysis which follows. The layer 4 pieces were all green, and were assumed to be from Mayor Island. There is one grey piece from layer 3, the remainder being green. The layer 2 assemblage includes both green and grey pieces, as well as some that are indeterminate. No obsidian was found in layer 3/4 transitional. The obsidian, like the basalt, includes both true flakes and pieces or chips, as well as some cores.

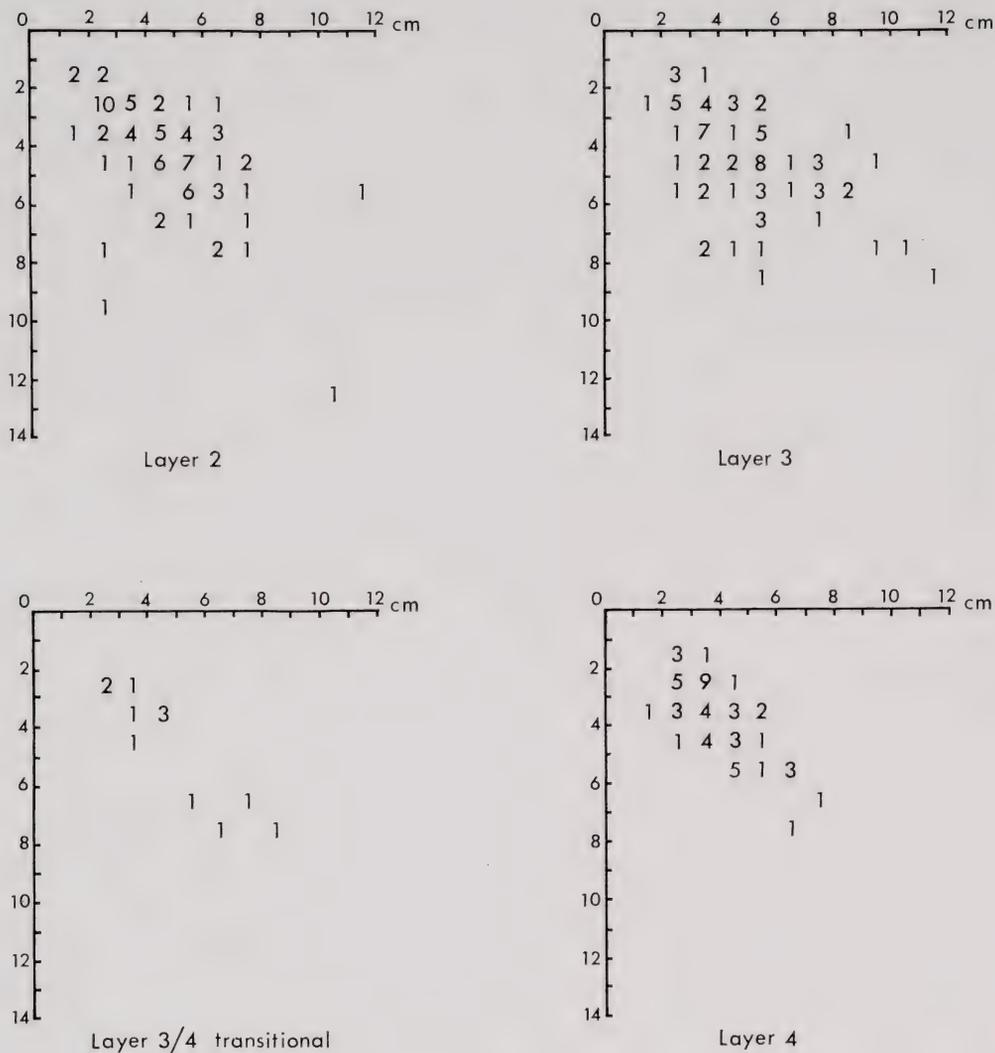


Fig. 35. Dimensions of basalt flakes, Skipper's Ridge, N40/7.

Surviving fragments of two of the three pieces from layer 4 show signs of use.

The obsidian from layer 3 comprises two cores from D7, one showing signs of retouch; three flakes from E6, all with signs of use; and four chips from F5-6 ext., all showing possible signs of use. It is one of these last which is grey. The two pieces used for hydration rim analysis were from Mayor Island.

The obsidian from layer 2 was widely scattered over the site with one or more pieces from most squares. The existing collection comprises 14 flakes (4 grey, all with evidence of use and 10 green, 6 used); 4 grey pieces (1 used) and 8 green; 3 grey cores and 4 green cores (2 of which are only tentatively identified as green); and 4 detrital

pebbles of indeterminate colour. The three pieces used for hydration rim analysis consisted of two green and one grey. Remaining fragments of two of these show signs of use. One other obsidian item from layer 2, listed in the catalogue, has been mislaid.

OTHER STONE FLAKES AND CORES

There were very few pieces of worked stone other than basalt and obsidian. None was recovered from layer 4, apart from the adze flake described above, and none from layer 3/4 transitional. From layer 3 in square F6 came one core-like piece of white siliceous stone, and one fragment of a hammer stone, or possibly of an adze, made from baked argillite or chert. There is a slightly larger assemblage of siliceous stone from layer 2, comprising one flake, one core and three core-like pieces from E6; one core-like piece from D7; one chip from D8; and one core, possibly used as a hammer stone, from F5 or F7. The core-like pieces may be part of the unworked stone constituent, rather than artifacts, although they have some appearance of being worked.

GRINDSTONES AND FILES

Despite published reference to files being found in layers 2 and 3 (Parker 1960, p. 40), there is very little in the existing assemblage which can confidently be identified as an abrasive tool. A piece of a sandstone grindstone weighing 539 g was found in the layer 4 fill of pit E in square E7. It is rectangular in shape, measuring 8.5×9.3 cm in plan, with one hollow ground surface. It has a maximum thickness of 4.8 cm. A possible file fragment was found in the fill of pit A, also in layer 4, but no definite files are present from the other layers.

HAMMER STONES

The presence of a possible hammer stone of siliceous material in layer 2, and a fragment of one in layer 3, has been noted. In addition, there was one hammer stone from the layer 4 fill of pit B, recorded in 1963, but since mislaid; and one or more possible hammer stones from F6, layer 3, also now mislaid.

SHELL ARTIFACTS

Two possible shell artifacts were found. In E7, layer 3, was a right valve of a *Pecten* with a perforation which may be deliberate. In D7, layer 2, was a small, apparently worked sliver of shell, 2.9 cm long and about 2 mm wide at one end, tapering to a fine point at the other.

DISCUSSION

The artifactual assemblage from Skipper's Ridge is of a kind now becoming familiar from open ridge sites. In particular it can be compared with the assemblage from Bellwood's site further up the same ridge, and with two ridge settlements on Motutapu Island. All these sites have evidence of stone working or use in some quantity, but relatively little else in the way of artifacts.

The contrast between Skipper's Ridge I and II has already been drawn by Bellwood, who suggested that basalt working at the lower site was largely confined to adze manufacture, but that other and perhaps specialised activities had also been performed at the upper site (1969, p. 211).

The basalt assemblage from Skipper's Ridge can be compared with the greywacke assemblage from N38/30 on Motutapu, a site where adze making was also an important activity. The adze fragments themselves can also be compared, and it is interesting to note in both sites the presence of roughouts which have been quite carefully shaped but with little or no attention yet given to the formation of the bevel.

Although the greater part of the basalt assemblage from Skipper's Ridge I is, as Bellwood noted, unused waste material, the presence of a few tools showing very extensive use should not be overlooked. The few which do show indisputable evidence of use are of blade-like proportions, indicating selection of a particular shape of flake for use. Since the ability of craftsmen using Tahanga stone to produce adze roughouts from single large flakes is repeatedly evident, it is hardly surprising that they could and did strike flakes of similar proportion to use in other ways.

The presence of hammers and a grindstone is further evidence of stone working on the site. Whether unsatisfactory roughouts were used as hammers, as suggested by Bellwood, is open to question. Most if not all of the hammer dressing on the specimens found can be more simply explained as part of the normal process of manufacture.

That adzes were used on the site is suggested by the few flakes from ground adzes found in each layer. Some of these, at least, are as likely to derive from adzes accidentally broken or chipped during use, as from the reworking of damaged adzes.

Activities taking place on the site, then, can be seen to include the manufacture, repair and use of adzes, and other activities which involved the use of obsidian and of a few blade-like basalt flakes.

The complete absence of bone artifacts, including fishhooks and evidence of their manufacture, and the virtual absence of siliceous stone flakes may be related. It must not be overlooked, however, that only a small part of the site was excavated. The much smaller excavation at N38/30 (Leahy 1970, 1972) indicated clearly how very specialised the distribution of artifacts on a small living site can be.

EVIDENCE OF AGE

A single radiocarbon date has recently been obtained for Skipper's Ridge (Davidson 1974). The sample was charcoal from the very base of the fill of pit E, and was identified as *Panax* sp. It was apparently found barely 1 cm above the pit floor, resting on a thin dark layer of "occupation debris" which was present on the floor of this pit and pit D. The charcoal therefore appears to belong to the beginning of the abandonment or refilling of the pit, and is not a contextless sample from the middle of the fill.

The result, of 807 ± 57 bp (NZ 1740), when adjusted for the new half life and corrected for secular effect becomes AD 1170 \pm 60 $-$ 50.¹ The dangers of accepting a single date have been enumerated many times; nonetheless there are grounds for considering this an acceptable result.

¹ I am here adopting a convention now widely accepted in British archaeology, where ad, bc and bp are used for dates expressed in radiocarbon years and AD, BC and BP for dates converted to calendar years.

Measurement of obsidian hydration rims, performed during pioneering work in this field, suggested that material from layers 3 and 4 was close together in time and broadly contemporary with layer 4 at the Opito Beach midden (Green 1964, p. 135), and that layer 2 was somewhat more recent. Restudy of the same samples gave similar readings on the samples from layers 2 and 4, but rather older readings for the two from layer 3 (Green, pers. comm.). This raises the problem of redeposition of artifacts from old contexts in younger layers, in addition to the problem already recognised by Green of the re-use of obsidian in this and other sites, resulting in different hydration readings on different surfaces.

The application of hydration rim measurement in New Zealand archaeology is still in too tentative a stage for the results to be taken as more than a very general indication of relative age. Nevertheless, it appears that there is some obsidian in layers 3 and 4 at Skipper's Ridge which gives readings similar to those for obsidian from Tairua (N44/2) or layer 4C at Opito Beach (N40/3), whereas other pieces give readings comparable to layer 4B at Opito Beach, or younger. The youngest readings on obsidian from layer 2, comparable to results for the early occupations at Kauri Point Pa (N53-54/5) place an upper time limit on the underlying layers. There are several explanations for the older readings, including redeposition on the site of obsidian from an earlier occupation (? occupation I), collection of obsidian from older sites in the general vicinity, or acquisition of obsidian cores with old surfaces previously exposed at the source. These perplexities, however, do not alter the general conclusion that the obsidian at Skipper's Ridge is certainly old enough to indicate the probable contemporaneity of the site with Archaic beach middens.

The evidence of the radiocarbon date suggests that occupation I at Skipper's Ridge may be old as any dated site on the Coromandel Peninsula with the possible exception of Tairua (N44/2). The similarity of lay-out from occupation I to occupation III suggests that relatively little time may have elapsed during these three occupations. The position of occupation IV is less certain. The general similarity in material recovered and to some extent also in site lay-out make it possible that the entire occupation on this part of the ridge belongs to the period before AD 1300. On the other hand, the obsidian results tend to support continuity in occupation from occupations I to III but a hiatus before occupation IV. In this case the continuity in site plan (for which the occupation IV evidence is weakest) must be restricted to the first three occupations.

DISCUSSION

The excavation at Skipper's Ridge uncovered one corner of an extensive settlement which, at least during the first part of its history, was neatly set out around an open space. The isolated square to the south of the main excavation (J7) indicates the possible extent of this central open space.

It would not be seriously suggested now that any of the structures revealed at Skipper's Ridge was a dwelling. Instead they can be seen as different kinds of storage structures. It is extremely probable that some, if not all of them, were used for the storage of kumara. The consistent presence of cooking stone and shell midden, and the basalt flaking debris and stone tools, however, show that this was not merely a specialised storage site, but one where a certain amount of domestic activity took place. It can be assumed that in the unexcavated part of the ridge there may have been one or more cooking areas belonging to the earlier occupations, and some houses. It appears that a substantial and well planned settlement was already in existence in the twelfth century.

The similarity in site plan during occupations I to III strongly suggests that these three occupations were continuous, and may have taken place within a relatively short period. Although there appears to have been a major change in pit construction from the buttress pits and rectangular underground pits with forepits of occupation I to the bin pits and rectangular pits without buttresses of occupations II and III, little other change can be documented during this part of the site's history.

Occupation IV, on the other hand, marks a change in use of the excavated part of the site (thought to be only a small proportion of the total site) from storage to cooking with a minor storage component. This change was accompanied, naturally enough, by an increase in cooking stones and shell midden in comparison with earlier layers. There is a suggestion, however, that the central open space was still preserved, even though the activities on this part of its periphery had changed. Occupation IV, therefore, could also be continuous with earlier occupations, and the change of use perhaps a reflection of a feeling that the usefulness of the area for pit construction had been at least temporarily exhausted.

The portable evidence from occupation IV provides no evidence of change beyond what might be expected to result from the change of use of this part of the site. The obsidian hydration results, however, suggest that occupation IV may have been rather later than the other occupations and separated from them by a period of abandonment longer than would be possible between occupations I, II and III if these were by people who held to the same site plan with each rebuilding.

The question of continuity of occupation, therefore, cannot be fully answered on the present evidence.

The similarity in the quantity and range of portable evidence found in association with structures on open settlements at Skipper's Ridge, Kauri Point (N53-54/6) and at Motutapu Island suggests that sites of this kind are not unique or unusual. Moreover, the existing evidence for their ages indicates that Skipper's Ridge and at least one of the sites (N38/37) on Motutapu are widely separated in time. It is probable that sites of this kind have been part of a northern New Zealand settlement pattern during much of the known span of New Zealand prehistory.

The interpretation of the pits at Skipper's Ridge as storage structures, and the inference that they were for kumara storage, implying agriculture, are no longer as open to challenge as they once were. The existence of agriculture as early as the twelfth century can now be accepted in view of the number of carbon dates for field systems and garden soils in widely separated parts of the North Island (Leach & Leach 1971; Groube 1966, p. 112; Peters n.d.; Sullivan pers. comm.). The evidence for pit storage as early as the earliest dated field systems, however, has until recently been suggestive but less definite. The early carbon date for occupation I at Skipper's Ridge supports the solitary date for Phase I at Sarah's Gully Pa (Birks & Birks 1970). These two dates in turn support the probability that the pits at Sarah's Gully settlement, correlated by Golson with the thirteenth to fourteenth century Archaic midden at Sarah's Gully, and regarded by Parker as similar to occupation III at Skipper's Ridge, are also of comparable age.

It is possible to consider not only what activities were represented at Skipper's Ridge, but what activities were not. The most striking feature is the absence of bird and sea mammal bone, and of fishhooks and bone artifacts generally, as well as all evidence of their manufacture. These are the very items that are most typical of the Archaic beach middens of the Coromandel coast, including many of those at Opito. If the early date of Skipper's Ridge is accepted, the early beach midden/late pit complex dichotomy becomes untenable, and alternative explanations are required, in which the two types of site are viewed as contemporary.

Fishhook manufacture and certain fishing and hunting activities are specialised male pursuits in some parts of Polynesia, and it might be argued that beach middens containing evidence of these activities were the sites of specialised men's houses. Although the men's communal house appears not to have been a feature of New Zealand settlements at the time of European contact, this need not mean that it was never present. The men's house hypothesis would provide a satisfactory interpretation of the situation if indeed Skipper's Ridge and the Opito Beach midden (N40/3) were linked parts of a single contemporary settlement, as Golson and Parker tentatively considered.

It is as likely, however, that the beach middens were seasonal camp sites, and that those at Opito were used by people from elsewhere in the general vicinity who camped on the beach in the same way as those observed by Cook and Banks in Mercury Bay in AD 1769 (Beaglehole 1962, I, pp. 427-8).

Skipper's Ridge also emphasises again the value of intensive study of small areas. It is the possibility of comparing in detail the portable evidence from Skipper's Ridge and N40/2, for example, that demonstrates their complementary nature. Detailed publication of other excavations in the area would facilitate renewed study of settlement patterns, for the summary and progress reports published during and immediately after the investigations now tend to obscure or gloss over the very details that might throw light on the specialised activities appropriate to the various sites.

Even if it is now accepted that there has been continuity in agriculture, in open ridge storage and settlement sites, and in use of Tahanga stone at Opito for centuries, there is still much to be investigated on the Kuaotunu Peninsula. For example, the range of time spanned by beach midden/working floors may well extend to the proto-historic period, although this has yet to be adequately demonstrated. The earliest appearance of fortifications on the Kuaotunu Peninsula also poses an important problem for investigation.

Wider problems are raised by the evidence from Skipper's Ridge. If the early dating of occupation I is correct, where and when is the origin of these sophisticated storage structures to be sought? At present no answer can be given. The single side-buttress pit in the early part of the Mount Roskill sequence is a solitary hint that such pits may eventually prove to be widespread. The only dated pits of comparable age to occupation I at Skipper's Ridge are those of Phase I at the nearby Sarah's Gully Pa (Birks & Birks 1970), which were, however, large bell-shaped pits entered vertically. This merely emphasises the proliferation of pit types on the Kuaotunu Peninsula at an early date and underlines the lack of similarly early evidence elsewhere. The

resemblances noted by Parker between pits at Kumara-Kaiamo in North Taranaki and Skipper's Ridge now appear less striking than they did in the early 1960s, although a full report on Kumara-Kaiamo is necessary for the pits there to be adequately assessed. The complexities of that site, however, were so great that the fundamentally important sequence of structures in the first two occupations was differently interpreted by Parker (1962, pp. 224-5) and Buist (1964, pp. 95-6).

Evidence is now beginning to accumulate for considerable contact between the Coromandel and Northland during what, for want of a new definition, can still be called the Archaic Phase. It is possible that not only Mayor Island obsidian, but Tahanga basalt and perhaps other Coromandel stone was reaching at least as far north as Houhora (Best n.d.). It is not unreasonable to suppose that storage pits of comparable age to those at Opito may be found in the north, although there is at present no reason to assume that such pits developed in the north rather than in the Coromandel/Bay of Plenty area. Indeed, the question of the development of kumara storage techniques continues to offer a fruitful field for speculation. Skipper's Ridge, however, provides some constraints. The origins of pit storage are to be sought in the earliest period of New Zealand prehistory, and it is now necessary to replace speculation about the primacy of Northland with some firm evidence. In the absence of such evidence, a convincing case can be made instead for the primacy of the Coromandel Peninsula.

If agriculture is firmly established in the Archaic phase and some ridge settlements with pits are known to be contemporary with or earlier than typical Archaic beach middens, cultural sequences depending partly on economic criteria can be misleading. The question of defining phases, at least in a region such as the Coromandel, becomes once again a problem of artifact typology. Yet it is more than ever apparent that many sites of all ages are not going to produce finds amenable to typological study. The increased use of independent dating methods to order sites chronologically becomes extremely important. Only when many different kinds of sites within a region can be chronologically grouped by independent methods will it be possible to identify in which parts of the cultural system there has been change at various times and in which there has been continuity.

SUMMARY

Excavations at Skipper's Ridge revealed one small corner of an extensive site with evidence of continuous or continual occupation involving the rebuilding of storage structures in approximately the same alignment around an open space. This occupation may have begun in the twelfth century A.D.

Portable material recovered in the excavation indicated that cooking, manufacture, repair and use of stone adzes, and other activities involving obsidian and stone flakes took place on the site. Shellfish and possibly fish were consumed, but there was no trace of the bird and sea mammal remains found in contemporary beach middens in the same bay, or of bone artifact manufacture, also a feature of nearby beach middens. This implies segregation of activities at a relatively early date, and shows that absence of what have hitherto been regarded as diagnostic Archaic features need not preclude a site from being early.

In the range of activities represented, Skipper's Ridge has some resemblance to undefended settlements occupying similar ridge end situations on Motutapu Island, near Auckland, and contrasts with the later site on the same ridge at which specialised storage and industrial activities appear to have taken place.

The possibilities for comparison between these sites and beach middens in the same area emphasise the need for publication of other relevant sites, so that questions of settlement pattern, economy and division of activities in this and other areas can be more fully explored.

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Finally, it is a pleasure to take this opportunity of expressing the gratitude of all archaeologists who have worked at Opito to Skipper Chapman, the landowner and discoverer of N40/7 which carries his name.

REFERENCES

BEAGLEHOLE, J. C. (Editor)

- 1962 *The Endeavour Journal of Joseph Banks 1768-1771*. The Trustees of the Public Library of New South Wales in association with Angus and Robertson, Sydney. 2 vols. 476, 406 pp. illus.

BELLWOOD, Peter

- 1969 Excavations at Skipper's Ridge, Opito Bay, Coromandel Peninsula, North Island of New Zealand. *Archaeol. and Physical Anthropol. in Oceania* IV (3): 198-221.

BEST, Simon

- n.d. Adzes, rocks and men. Unpublished M.A. research essay, University of Auckland (1975).

BIRKS, Lawrence and Helen

- 1970 Radiocarbon dates for a pa site at Sarah's Gully, Coromandel Peninsula. *N.Z. Archaeol. Ass. Newsl.* 13 (2): 63.

BUIST, A G.

- 1964 Archaeology in North Taranaki, New Zealand. *N.Z. Archaeol. Ass. Monogr.* 3: 1-102.

CALDER, Angela

- n.d. *Opito and Otama Archaeological Report 1972*. Privately produced. 52 pp. illus.

DAVIDSON, Janet M.

- n.d. The physical analysis of refuse in New Zealand archaeological sites. Unpublished M.A. thesis, University of Auckland (1964).
 1970 Excavation of an "undefended" site, N38/37, on Motutapu Island, New Zealand. *Rec. Auckland Inst. Mus.* 7: 31-60.
 1974 A radiocarbon date from Skipper's Ridge (N40/7), Opito, Coromandel Peninsula. *N.Z. Archaeol. Ass. Newsl.* 17 (1): 50-52.

DAVIDSON, Janet M. and R. C. GREEN

- 1975 A locality map for Skipper's Ridge (N40/7), Opito. *Rec. Auckland Inst. Mus.* 12: 43-46.

DUFF, Roger

- 1956 *The moa-hunter period of Maori culture*. Government Printer, Wellington. (Canterbury Mus. Bull. 1). 2nd Edition. 400 pp. illus.
 1959 Neolithic adzes of Eastern Polynesia. In *Anthropology in the South Seas*. J. D. Freeman and W. R. Geddes (Eds.). Avery, New Plymouth. pp. 121-147.

FOX, Aileen

- 1974 Prehistoric Maori storage pits: problems in interpretation. *J. Polynes. Soc.* 83: (2): 141-154.

GOLSON, Jack

- 1959 Culture change in prehistoric New Zealand. In *Anthropology in the South Seas*. J. D. Freeman and W. R. Geddes (Eds.). Avery, New Plymouth. pp. 29-74.
 1965 Some considerations of the role of theory in New Zealand Archaeology. *N.Z. Archaeol. Ass. Newsl.* 8 (2): 79-92.

GREEN, R. C.

- 1963a Summaries of sites at Opito, Sarah's Gully, and Great Mercury Island. *N.Z. Archaeol. Ass. Newsl.* 6 (1): 57-69.
 1963b A review of the prehistoric sequence of the Auckland Province. *Publ. Auckland Archaeol. Soc.* 1 and *N.Z. Archaeol. Ass.* 2, pp. 1-114.
 1964 Sources, ages and exploitation of New Zealand obsidian, an interim report. *N.Z. Archaeol. Ass. Newsl.* 7 (3): 134-143.

GROUBE, L. M.

- n.d. Settlement pattern in prehistoric New Zealand. Unpublished M.A. thesis, University of Auckland (1964).
 1965 Settlement patterns in New Zealand prehistory. *Univ. Otago Anthropol. Dep. occasional pap. archaeol.* 1. ca. 100 pp. (paging varies).
 1966 Rescue excavations in the Bay of Islands. *N.Z. Archaeol. Ass. Newsl.* 9 (3): 108-114.

JOLLY, R. G. W. and Pat MURDOCH

- 1973 Further excavations at Site N40/2, Opito Bay. *N.Z. Archaeol. Ass. Newsl.* 16 (2): 66-72.

LAW, R. G.

- 1972 Archaeology at Harataonga Bay, Great Barrier Island. *Rec. Auckland Inst. Mus.* 9: 81-123.

LEACH, B. F. and H. M.

- 1971 Radiocarbon dates for the Wairarapa — II. *N.Z. Archaeol. Ass. Newsl.* 14 (4): 201.

LEAHY, Anne

- 1970 Excavations at Site N38/30, Motutapu Island, New Zealand. *Rec. Auckland Inst. Mus.* 7: 61-82.
 1972 Further excavations at Site N38/30, Motutapu Island, New Zealand. *Rec. Auckland Inst. Mus.* 9: 15-26.
 1974 Excavations at Hot Water Beach (N44/69), Coromandel Peninsula. *Rec. Auckland Inst. Mus.* 11: 23-76.

PARKER, R. H.

- 1959 A new site at Opito. *N.Z. Archaeol. Ass. Newsl.* 2 (2): 18-20.
 1960 Reconnaissance at Skipper's Ridge. *N.Z. Archaeol. Ass. Newsl.* 3 (2): 39-41.
 1962 Aspect and phase on Skipper's Ridge (Opito) and Kumara-Kaiamo (Urenui). *N.Z. Archaeol. Ass. Newsl.* 5 (4): 222-232.

PETERS, K. M.

- n.d. Agricultural gardens on Moturua Island in the Bay of Islands. Manuscript of 1975 conference report for publication in *N.Z. Archaeol. Ass. Newsl.* (1975).

SHAWCROSS, Wilfred

- 1962 Excavations on Mount Roskill. *N.Z. Archaeol. Ass. Newsl.* 5 (1): 81-83.
 1964 Stone flake industries in New Zealand. *J. Polynes. Soc.* 73 (1): 7-25.
 1966 Ongari Point — second season. *N.Z. Archaeol. Ass. Newsl.* 9 (2): 53-73.